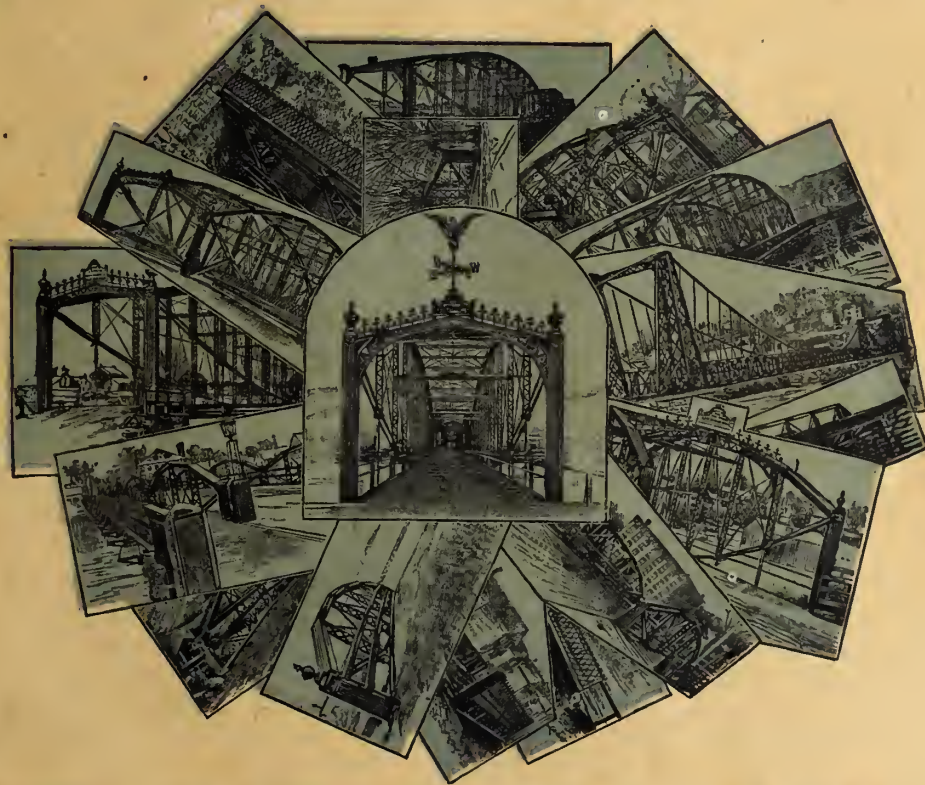


THE BERLIN IRON BRIDGE CO



OFFICE AND WORKS

EAST BERLIN, CONN., U. S. A.



THE LIBRARIES
COLUMBIA UNIVERSITY



AVERY LIBRARY

THE BERLIN IRON BRIDGE COMPANY,

OFFICE AND WORKS:

❖ EAST BERLIN, CONNECTICUT, U. S. A. ❖

IRON RAILROAD BRIDGES,
IRON ROOFS,
WROUGHT IRON TURNABLES,
IRON FIRE ESCAPES,
IRON BUILDINGS,
PLATE AND BOX GIRDERS FOR
BRIDGES AND BUILDINGS.

IRON HIGHWAY BRIDGES,
CORRUGATED IRON FIRE-PROOF
DOORS AND SHUTTERS,
CORRUGATED IRON,
STONE ARCH BRIDGES,
SUSPENSION BRIDGES,
ROLLED I BEAMS, CHANNELS,
ANGLES, ETC.

IT IS OUR ENDEAVOR TO FURNISH NOTHING BUT FIRST-CLASS WORK FOR A FAIR REMUNERATION.

EVERY LIBRARY
COLUMBIA U. L.

OFFICERS:

BURR K. FIELD,

VICE-PRESIDENT AND TREASURER.

CHARLES M. JARVIS,

PRESIDENT AND CHIEF ENGINEER.

GEO. H. SAGE,

SECRETARY.

MACE MOULTON, CONSULTING ENGINEER.

ENGINEERS:

S. W. BOWLES, JR.,

R. FLEMING,

E. W. STEARNS,

J. H. EDWARDS,

A. L. HYDE,

SUP'T OF WORKS:

W. N. EDSON.

COLUMBIA U. L.

SUP'T OF SUBSTRUCTURES:

C. V. PENDLETON.

AGENTS:

WM. O. DOUGLAS,

JOHN TOWNE,

F. K. FIELD,

WM. PAYSON, EDNA, TEXAS.

EVERY
COLUMBIA U. L.

CLASSIFIED
AT
S40
B456

PREFACE AND INTRODUCTION.

TO THE PUBLIC:



IN PRESENTING THIS CATALOGUE to the public it is our intention to illustrate our line of work by engravings taken directly from photographs of actual structures built by us. These illustrations are not pictures made to order to show each bridge in the best possible light, but are all taken from photographs of actual structures, just as they are. We have endeavored to illustrate as many different kinds of bridges as possible, so that any party in want of a new iron bridge can find something here which will show about how his bridge will look when completed.

The first iron bridges built in this country were made by Whipple, the compression members being cast-iron, and the tension members being wrought-iron. Many of these bridges are standing at the present day, notwithstanding their crude construction, and speak much for the intelligence and honor of the builder. Cast-iron is, however, not well adapted for use in iron bridges, for no matter how well and by what process the castings are made they are very apt to contain serious and unseen flaws, which only develop after breaking, so that, at the present time, cast-iron, in bridge construction, except for minor details, has been almost universally abandoned. The first bridges built by Whipple were built in a scientific manner, and, considering the limited knowledge of the subject at that time, reflect great credit upon the designer. Since then but little progress has been made in the designing of iron highway bridges except in the matter of detail, until the introduction of our Patent Parabolic Truss, which appeared in 1877 and 1878. This form of truss was a radical departure from the old Whipple Truss, or the old Bow String Arch, which were in universal use until the Fall of 1877 or the Spring of 1878, and the introduction of the Parabolic Truss at that time marks a new era in iron bridge construction.

The great object in an iron highway bridge is stiffness and simplicity. If the bridge is not stiff and rigid the traveling public get an idea that it is weak and not fit for its work, and it is very soon necessary to replace it. Simplicity is required, because iron highway bridges, after being once built, are seldom, if ever again, looked after, except, perhaps, occasionally to paint them. If the bridge is simple

in its construction it is not apt to get out of repair, as would be the case of a complex structure. Our patent Parabolic Truss particularly commends itself upon these two points, viz : stiffness and simplicity.

Each part of the bridge is designed to do its special work, and every part helps to support as well as strengthen. A piece of string has little or no strength of itself when drawn perfectly straight, but if allowed to deflect even a small distance, its strength is very materially increased—the same with a piece of timber. Take, for example, a 12 x 12 piece of timber, supported at its ends, and having a span of 20 feet ; this timber will stand a given load, under these conditions, but if the ends are rigidly held, and the timber is curved between so that there is a rise at the center of three feet, its supporting power is more than tripled. This explains why the Parabolic Bridge is stronger, better, and stiffer than the old style bridge, with parallel chords. Neither chord of a Pratt Truss will support a pound taken by itself alone, but with a Parabolic Bridge either chord will not only support itself but will support a large load besides. Unite these two at the ends, one to resist the other, and you have the strongest form of truss known.

One particular merit in the Parabolic Truss is that each part of the bridge is designed to do its own separate work.

In iron bridges there are two loads to be resisted ; first, the vertical or live load, and next, the horizontal or wind load—this latter in long spans with narrow roadways being often more than the vertical load. In our Parabolic bridge the vertical load is resisted by the main trusses, and the horizontal or wind load by a chord placed beneath the floor, and tangent with the vertical truss at the center, and designed especially for this purpose. There is no other bridge built which provides for this wind load, and where the span is of any considerable length, and the roadway of medium width, it amounts from 25 per cent to 100 per cent of the live road. This often reduces the live load capacity of the truss one half, unless especially provided for, as in our Patent Parabolic Truss Bridge.

The Parabolic truss is simplicity itself. The chords have a uniform section throughout their length, and, therefore, a Parabolic bridge is stiffer than a Parallel chord bridge, where the sections are lighter in the end panels. There are no temperature strains in the Parabolic bridge, as the parts are so proportioned that each expands its regular proportion under the changes of temperature. Every part of the bridge admits of exact analysis and calculation.

The capacity of iron highway bridges varies with their location. Large city bridges which are built to carry heavily loaded truck teams and continuous traffic, must of necessity be heavier and stronger than country bridges, where the loads are light and the traffic infrequent. For this reason the capacity of bridges, or what is equivalent to the same, the unit strains in the different members of a bridge, vary with the different locations.

City bridges should also be proportioned for an Aveling & Porter steam road roller, concentrating a weight of 14,000 pounds on the

front axle, and 22,000 pounds on the rear axle. This steam road roller load, however, effects mainly the floor system and the web rather than the chords of the bridge.

There are two classes of connections used in bridges, viz., pin connections and riveted connections. Each is well adapted for its proper condition. In spans of less than 100 feet, riveted connections do very well, but in large spans they are apt to work loose in time and give trouble. As a general rule we recommend pin connected bridges, although we are prepared to make bridges with riveted connections, wherever desired.

At the present time the quality of the iron used in iron highway bridges by all first-class builders is so well known that little need be said on that subject. It does not pay for a bridge company to use poor iron, for the cost of labor in working it is so much greater than the cost of labor to work first-class iron, that it does not pay any Company to use anything but the very best of bridge iron. Good bridge iron should have an ultimate strength of from 45,000 to 50,000 pounds per square inch, and elastic limit of not less than 26,000 pounds per square inch.

To parties contemplating iron bridges we would say that we are prepared to furnish plans, specifications, and estimates for both sub-structures and super-structures. We have a corps of first-class engineers, and, whenever desired, can send one of our engineers to advise with town officers as to location, number of spans, foundations, etc.

We are also using a large number of cylinder piers, shown on page 57, for locations where stone is expensive, or where the foundation is soft and unreliable. We have put in a large number of these cylinder piers, and in every case they have given the best of satisfaction, and often have been subjected to very severe floods, without injury.

When called upon for our services in preparing plans and estimates, or for giving advice, we make no charge as that is part of our business.

IRON JOIST.

If you are building an iron bridge, build an iron bridge, that is, build as much of it of iron as possible.

It was formerly the custom to build the trusses of iron, and the floor beams and joists, of wood; but as iron bridges came more in general use, iron floor beams were introduced, and now a great many iron bridges are built with the joists of iron. If it is advisable to build an iron bridge, it is advisable to build a good one, and to build as much of it of iron as is possible. We therefore recommend towns to build their bridges entirely of iron, with the exception of the floor plank, as the extra expense of an iron joist over a wooden joist is very small compared with the advantage to be derived.

THE RELATIVE ECONOMY OF IRON AND WOODEN BRIDGES.

The high price and scarcity of good bridge timber at the present time prevents the building of wooden bridges to any very large extent, as it costs but little more to build a first-class Iron Bridge, than it does a first-class wooden bridge. To parties who contemplate building wooden bridges in preference to iron bridges on the score of economy, we have one word to say, as we think we can prove that in time the iron bridge is much more economical. Suppose, for example, that you can build two wooden bridges for the same amount of money that it will cost to build one iron bridge, or, that the iron bridge costs twice as much as the wooden bridge. Suppose two towns wanting a large number of bridges both start in at the same time, one building iron bridges and the other wooden bridges. Suppose the town building iron bridges builds one iron bridge each year, and the town building wooden bridges builds two wooden bridges each year, thus each town spending the same amount of money each year for bridges. The following table gives the progress from year to year, and shows where each town will land at the end of each year up to 20 years :

At the end of 10 years, the town building wooden bridges will have to commence to renew those built the first year, as this table is made on the supposition that the wooden bridges will last for 10 years—this is the life of an ordinary wooden bridge. Therefore, the town building wooden bridges, at the end of 10 years will have 20 bridges on hand, all of wood, while the town building one iron bridge each year will have 10 iron bridges on hand. From this time forward the matter changes, as the town building two wooden bridges each year, must commence to renew the two wooden bridges built the first year, so that they will never have more than 20 wooden bridges, if they only build two each year, all their money going for renewals. The town building iron bridges, however, will keep increasing one bridge each year, so that at the end of 20 years each town will have the same number of bridges, but the town building wooden bridges having 20 wooden bridges on hand, part of them having been in use 10 years, and the town building iron bridges will have 20 iron bridges on hand. In both cases each town has spent the same amount of money in the 20 years, and one has 20 iron bridges on hand, and the other 20 wooden bridges, proving conclusively that in the long run iron bridges are much cheaper than wooden bridges.

TERMS OF YEARS.	NO. OF IRON BRIDGES IN USE.	NO. OF WOODEN BRIDGES IN USE.
At end of 1 year	1	2
" " " 2 years	2	4
" " " 3 "	3	6
" " " 4 "	4	8
" " " 5 "	5	10
" " " 6 "	6	12
" " " 7 "	7	14
" " " 8 "	8	16
" " " 9 "	9	18
" " " 10 "	10	20
" " " 11 "	11	20
" " " 12 "	12	20
" " " 13 "	13	20
" " " 14 "	14	20
" " " 15 "	15	20
" " " 16 "	16	20
" " " 17 "	17	20
" " " 18 "	18	20
" " " 19 "	19	20
" " " 20 "	20	20

CONCLUSION.

In conclusion we have only one word to say—we give in this catalogue a partial list of the iron highway bridges built by us during the last ten years, which shows that in the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, and New York, we have built over 90 per cent of all the iron highway bridges which have been put up in the last ten years ; and have, in fact, built more bridges in the states named than all the other bridge companies in this country combined. This is a broad statement, but the facts justify it.

We also give a list of a few of the testimonials which we have received, which show conclusively the character of the work which we produce. There is not an Iron Highway Bridge Company in the United States which can produce a list of the bridges and a list of testimonials equal to this, and we invite city and town authorities to correspond with the authorities where we have put up bridges, with a view of ascertaining the character of the work which we build, as we have no hesitation in saying that we build the best iron highway bridges that are built in America. We do not claim to build the cheapest bridges in America, but we do claim to build the best, and to build as cheaply as is possible to produce first-class work.

THE BERLIN IRON BRIDGE COMPANY.

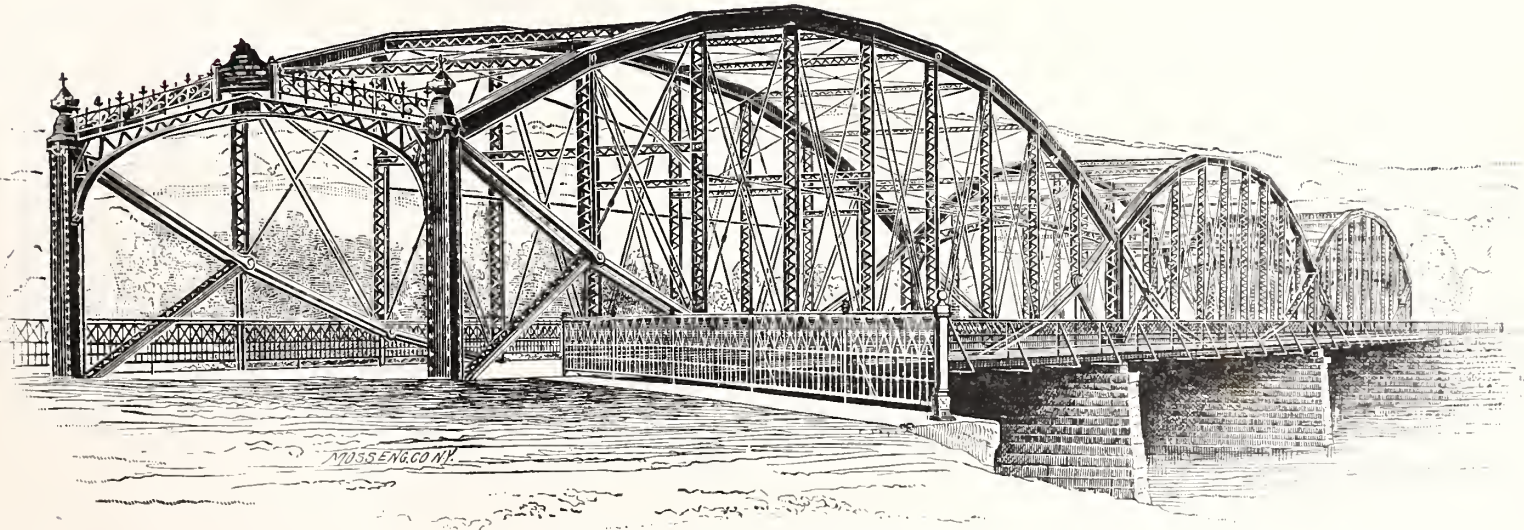


BRIDGE AT BINGHAMTON, N. Y.

THE CUT on the opposite page represents a bridge built by us in 1887, at Binghamton, N. Y. The bridge consists of three spans of 165 feet each, with a roadway 24 feet wide in the clear, and two sidewalks, each six feet wide. The bridge is across the Susquehanna River, at the foot of Washington street, and takes the place of what has been known for a great many years past as "the old covered bridge." The bridge is located on the site of the original settlement of the city of Binghamton, which in olden times was known as "Chenang Pint."

The Washington street electric street railroad cars cross the bridge. These cars are run by electricity—the motor being placed in the car—and therefore when loaded with a crowd of people are much heavier than the ordinary street car. The bridge is on the direct route to Ross Park, and is crossed by many thousands of people every day, and by these street cars heavily loaded with picnic and excursion parties. Ross Park is the only park in the city, and was presented to the city some years ago, through the munificence of Erastus Ross, Esq., and is a popular resort for church picnics and excursions.

Owing to the beautiful design of this bridge it has largely increased the value of property in the immediate vicinity. We furnished the whole bridge complete, from the foundation to the finish, doing all the work ourselves with our own men and with our own tools. The roadway is paved with asphalt pavement and has iron joists. Without a doubt it is the finest iron highway bridge in New York State, and second to no iron highway bridge in this country.



BRIDGE AT BINGHAMTON, N. Y.

Three spans, 165 feet each. Roadway, 24 feet wide. Two walks, 6 feet wide each.

BRIDGE AT WATERBURY, CONN.

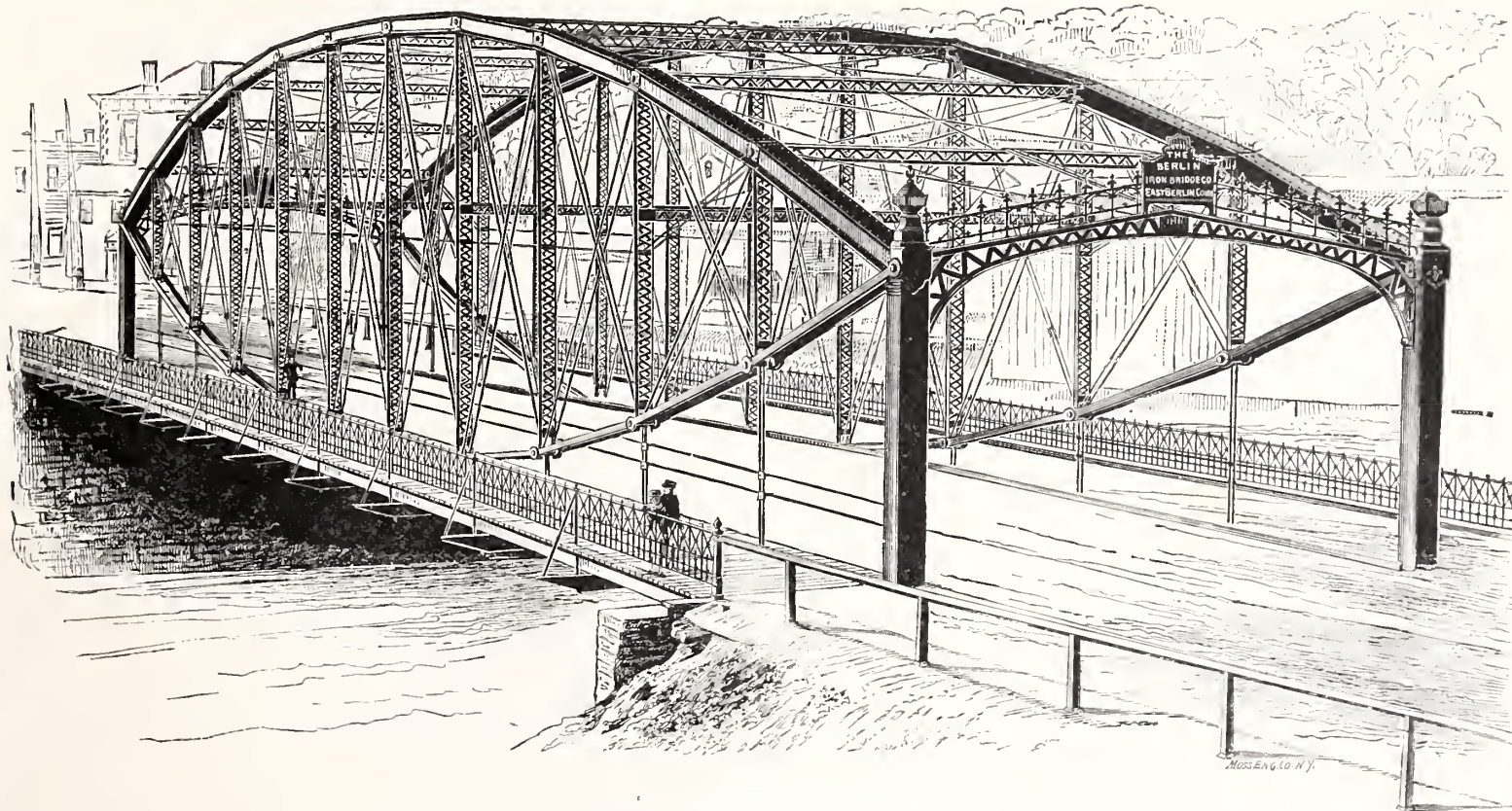
THIS BRIDGE is without doubt the heaviest iron highway bridge in the New England States.

The bridge spans the Naugatuck River on Bank Street, in the city of Waterbury, Conn., and consists of one span of 175 feet, having a roadway 27 feet wide in the clear, and two sidewalks, each nine feet wide in the clear. The cut on the opposite page gives a good idea of the appearance of the bridge, but, owing to the fact that the street crosses the river on a slight angle, the bridge does not present as good an appearance as though made perfectly square. The roadway of the bridge is provided with iron joists and asphalt pavement.

The bridge is crossed by a line of street cars, which run directly through the center of the roadway—a wise provision in bridges with very wide roadways, but a very unwise provision where the roadways are narrow, as in the latter case the railroad tracks should run near the outside of the roadway.

This bridge replaces an old iron arch bridge which had been built about ten years—it being taken down because it was too light and too narrow to accommodate the very heavy traffic.

Waterbury is one of the largest manufacturing cities in Connecticut, and the centre of the brass industry. With two rivers flowing entirely through the city, and with large railroad connections, there are probably more spans of iron bridge in the city of Waterbury than in any city of its size in this country. We have built for the city and town of Waterbury, and for the railroad companies, in Waterbury over 40 spans of iron bridge in the last ten years, and any parties desiring to see all the different kinds of iron bridges, from the simple short span of beam bridge (shown at the bottom of page 40) to the heaviest iron truss railroad bridges, can find both of these extremes and all intermediates at Waterbury.



BRIDGE AT WATERBURY, CONN.

Span, 175 feet. Roadway, 27 feet wide. Two sidewalks, each 9 feet wide



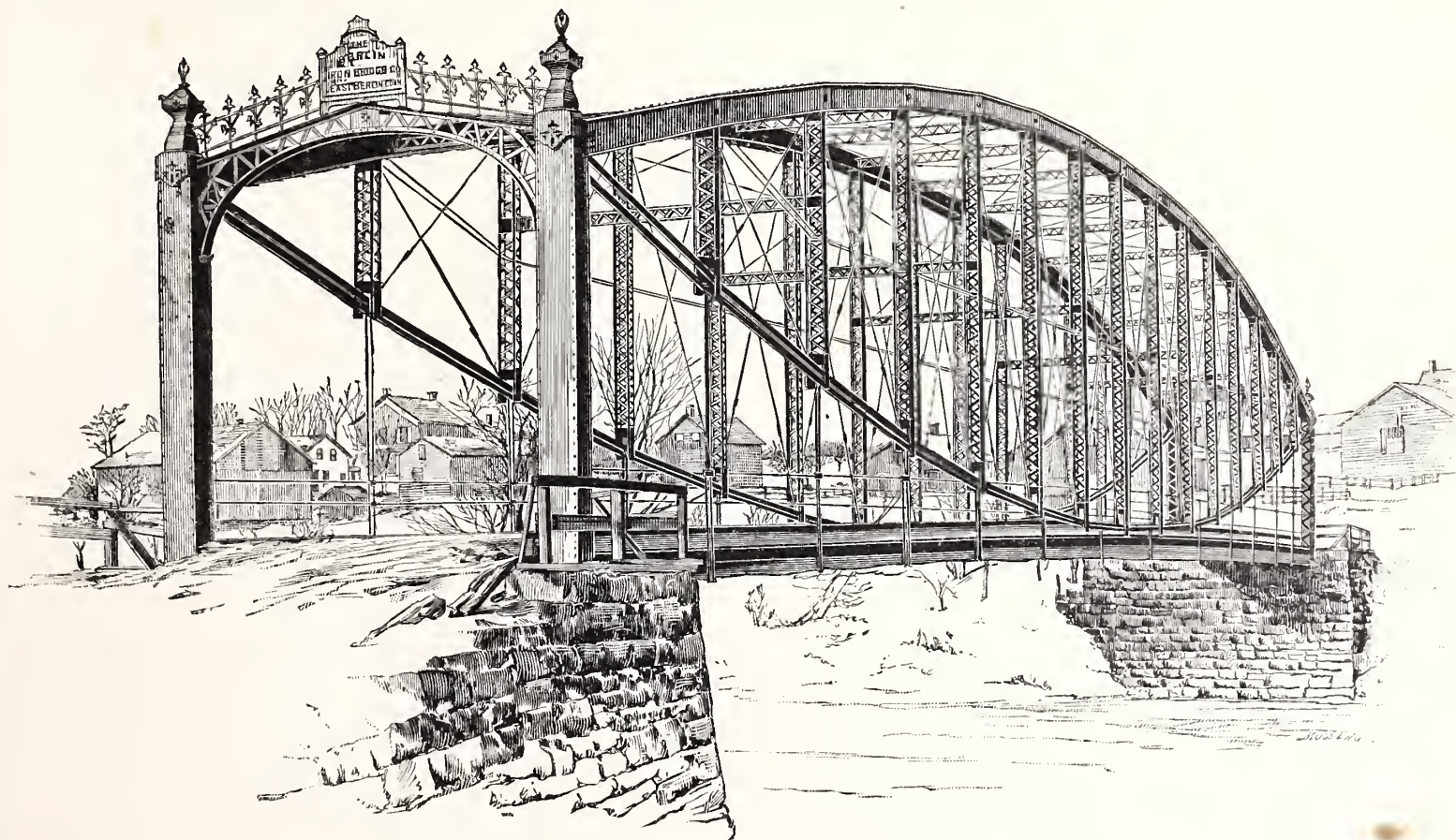
BRIDGE AT MASSENA, ST. LAWRENCE CO., N. Y.

HERE WE have represented a bridge with a single span 235 feet in the clear, with a roadway 16 feet wide in the clear. This is a bridge which illustrates in a forcible manner our remarks in the introduction to this catalogue relating to long spans and narrow roadways, and the particular adaptability of the Parabolic Bridge to this class of structures. There is not a Pratt truss bridge or a Bow String girder, or, in fact, a Bridge of any kind in this country having an equal span and as narrow a roadway, that has as much lateral stiffness as this bridge—for the reason that the bridge has an independent chord under the floor which takes care of the wind load and the side vibration of the bridge.

Parties contemplating long span bridges will do well to examine this bridge—or others built by us of equal and greater spans—before deciding what kind of a bridge to build.

There are many long span bridges in the vicinity of Massena, as the width of the Racket river and the climatic conditions require long spans. Ice often forms in this river to a depth of four feet, and it is almost impossible to put up any kind of piers which will stand the pressure when the ice starts early in the Spring with severe high water. The cost of maintaining piers under these conditions, is greater than to build bridges in long single spans.

The bridge as shown is taken direct from a photograph, but, owing to the fact that it rests on high abutments, the photograph is taken from the underside, and presents a rather peculiar appearance.



BRIDGE AT MASSENA, ST. LAWRENCE COUNTY, N. Y.

Span, 235 feet. Roadway, 16 feet.



BRIDGE AT HIGHGATE CENTER, VERMONT.

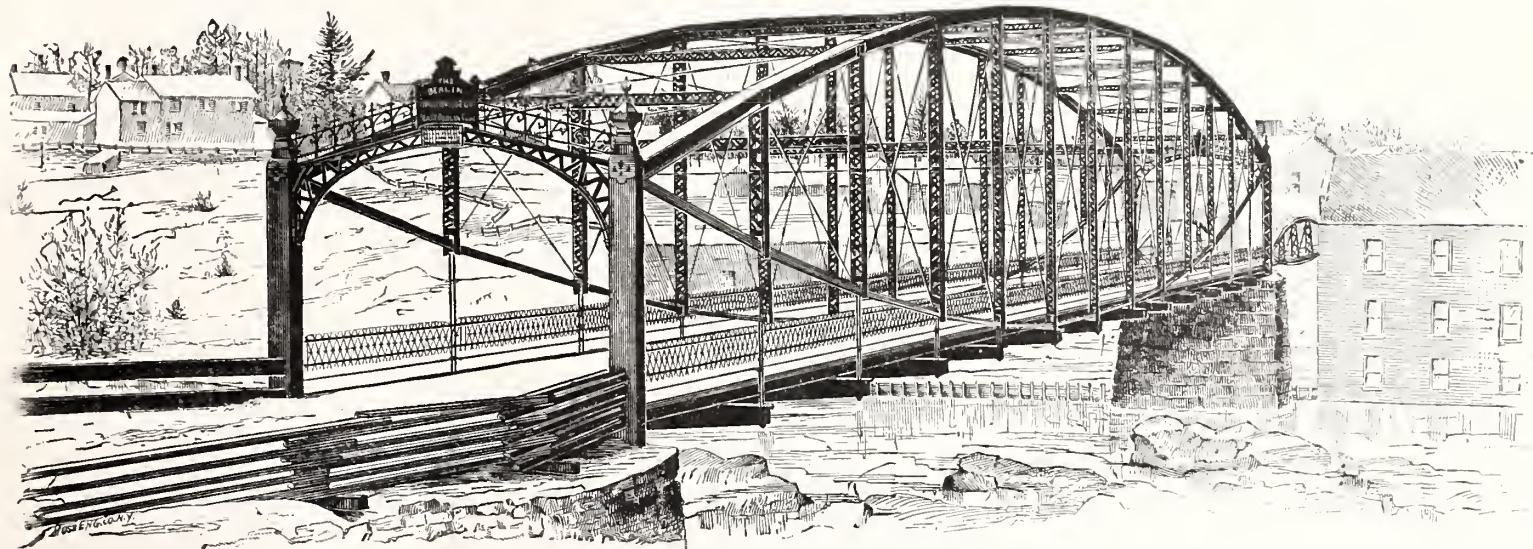
THE BRIDGE at Highgate Center, Vt., consists of one span of 215 feet, and one span of 80 feet, with a roadway 20 feet in the clear, and is shown by the cut on the opposite page. The State of Vermont has lately passed a law whereby towns excessively burdened with roads and bridges can, under certain restrictions, apply to the State and receive financial aid. The bridge here shown was built by a commissioner appointed by the State under this law, and is the longest single span of iron highway bridge in the State of Vermont.

At the point where it crosses the Missisquoi River the banks are very high and rocky—the distance from the roadway to the bed of the stream being 70 feet. No more beautiful sight can be imagined than this location where the boiling, bubbling, surging water rushes down through the narrow channels with a force which is almost irresistible, and with a roar which prevents ordinary conversation being carried on near the bridge.

This bridge replaces what was probably the best built wooden highway bridge in the New England States. Built of first growth Vermont pine, it stood in this location for a long series of years, but, finally, like all wooden bridges, had to give way for iron.

The iron bridge adds very much to the beauty of the surroundings, while the old wooden bridge detracted from the beautiful scenery.

Notice that the bridge is provided on each side with a 16-inch lattice railing, and below this one line of iron pipe, which form a very effectual barricade for school children or persons who are apt to be timid when crossing a bridge at such a great height.



BRIDGE AT HIGHGATE, VT.

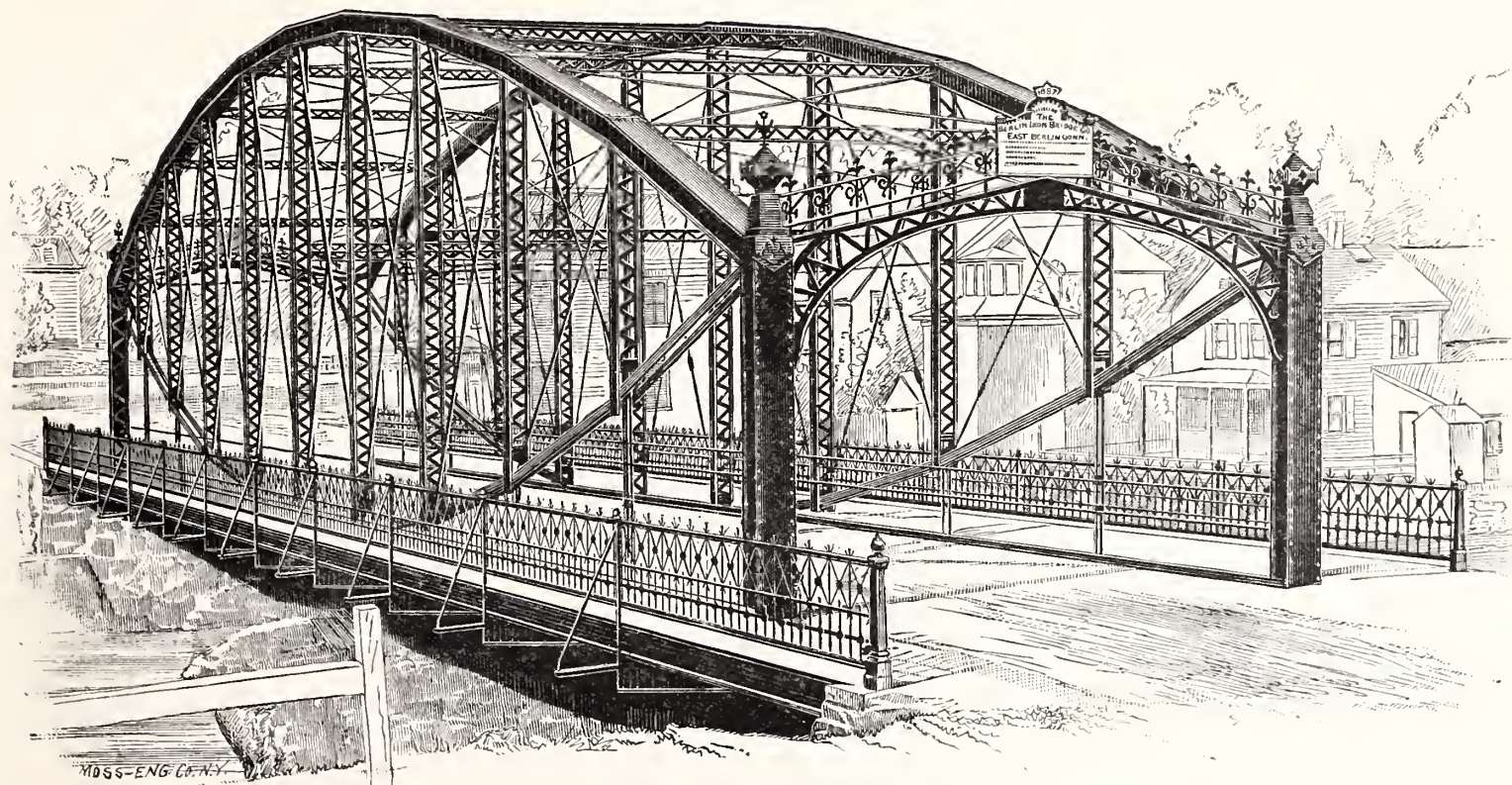
One Span of 215 feet, and one Span of 80 feet. Roadway, 20 feet wide.

BRIDGE AT STAMFORD, CONN.

THE CUT on the opposite page is taken from a photograph of a bridge built by us in 1887, at Stamford, Conn., and consists of one span of 150 feet, with a roadway 20 feet wide, and two walks, each five feet wide. Stamford is on the line of the N. Y., N. H. & H. R. R., and the bridge can be clearly seen from the cars on the south side of the track. At the time this bridge was built there was a great strife as to which was the better, an iron or a stone arch bridge, but, owing to the extreme cost of a stone bridge, an iron bridge with iron joist and asphalt pavement was adopted at a cost of less than one-fourth of a stone arch.

The bridge is on a grade of about three feet in its length, which is hardly noticeable at a distance, but it shows the great adaptability of the Parabolic truss to bridges of this class—bridges on a grade.

The truss is placed horizontally, perfectly level and the floor is made tangent to the truss at the center; one end post is lengthened while the other end post is shortened an equal amount, so that the bridge is not distorted in any way, nor is there any ambiguity in the amount or character of the strain, owing to the bridge being on a grade. This is the only form of truss made in which this condition prevails.



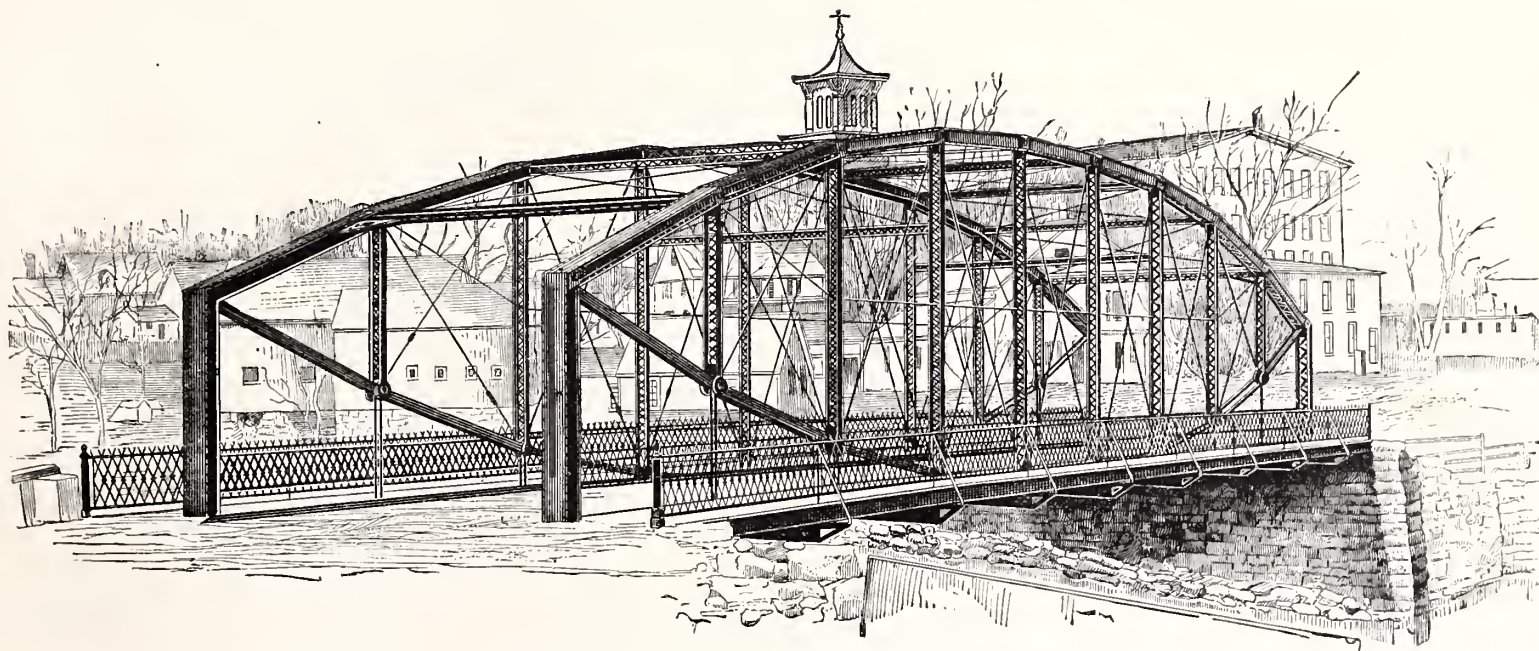
BRIDGE AT STAMFORD, CONN.

Span, 150 feet. Roadway, 20 feet wide. Two walks, each 5 feet wide.

BRIDGE AT DANIELSONVILLE, CONN.

BRIDGE SHOWN on opposite page is located at Danielsonville, Conn., on the N. Y. & N. E. R. R., and consists of one span of 140 feet, with a roadway 20 feet wide in the clear, and two sidewalks, each five feet wide. The bridge has iron joist and heavy capacity, as it is situated in the midst of a large manufacturing community and is subjected to the heaviest traffic. The bridge, with its surroundings, presents a very handsome appearance, and has added very much to the beauty of that part of the town in which it is situated. Note also that in this bridge the trusses have a lattice railing to protect the foot passengers on the sidewalk.

This is not an absolute necessity but is preferred by a great many towns, especially where the travel is heavy and frequent both on the roadway and sidewalks. It acts equally as well to prevent children from getting on the roadway and thus be in danger of being injured, as well as to keep teams and cattle from the sidewalks. Two or three bars of iron pipe are equally as effective in preventing the roadway travel from getting on to the sidewalk as is a lattice railing, but a lattice railing is much more sightly and adds greatly to the appearance of any bridge.



BRIDGE AT DANIELSONVILLE, CONN.

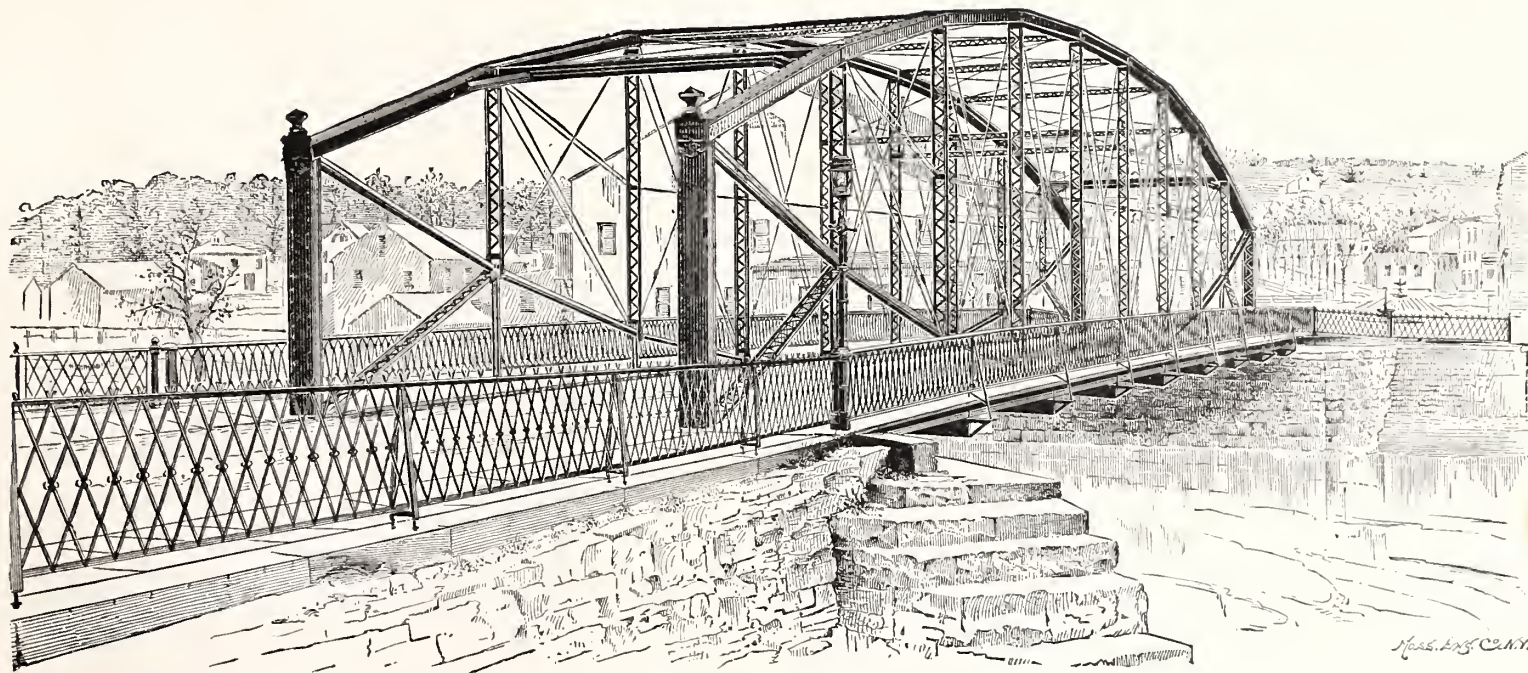
Span, 140 feet. Roadway, 20 feet wide. Two walks, each 5 feet wide.

BRIDGE AT OXFORD, N. Y.

THE BRIDGE on the opposite page is taken from a photograph of a bridge built by us in 1884, at Oxford, N. Y. The bridge consists of one span of 150 feet, with a roadway 20 feet wide in the clear, and two sidewalks, each five feet wide.

This was one of the first iron highway bridges of any considerable span built by us in New York State. Oxford is a small but very enterprising and flourishing town, and one of its principal industries is the large stone quarry of Clarke & Son. Here is quarried the finest flagging stone to be found anywhere in New York State, if not in the United States. These quarries can furnish flagging stone having a larger surface measure, without crack or blemish, than any quarry in the United States. Frequently these stone weigh from 18 to 25 tons, and in order to get them to the depot, it is necessary to haul them over this bridge. There is probably no bridge in New York State which is subjected to so severe and heavy loads as this bridge, and it shows conclusively the adaptability of the Parabolic Truss to heavy concentrated loads.

The masonry on which this bridge stands is a marvel of strength and good workmanship, the stone having been taken from the adjacent quarry of Clarke & Son. The workmanship also is first-class, and the abutments are probably equal to any ever built in New York State.



BRIDGE AT OXFORD, N. Y.

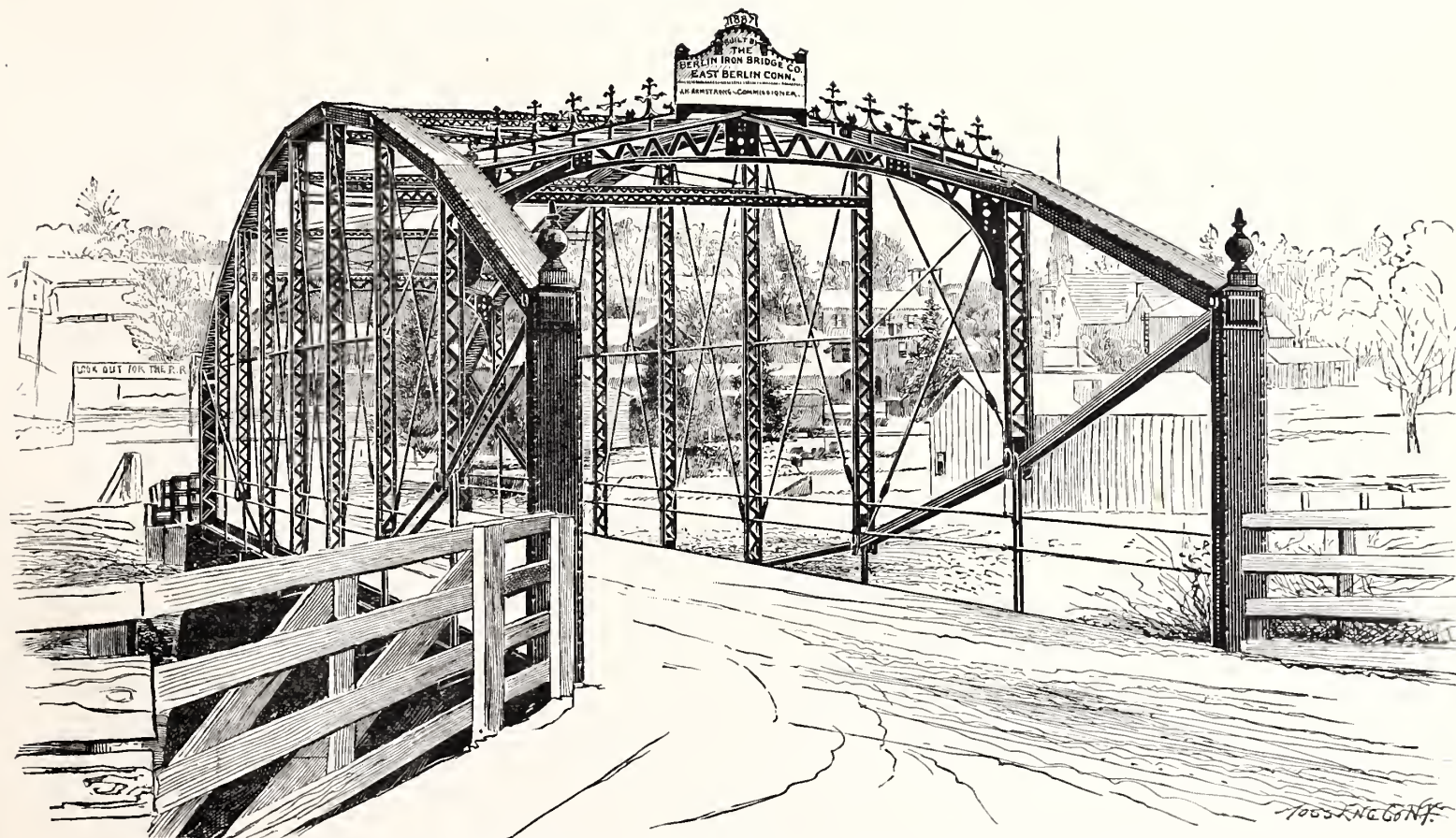
Span, 150 feet. Roadway, 20 feet wide. Two sidewalks, each 5 feet wide.



BRIDGE AT KENNEDY, CHAUTAUQUA CO., N. Y.

THIS BRIDGE represents in a general way a large type of ordinary iron highway bridges in use throughout the State of New York. The bridge has a span of 115 feet, with a roadway 16 feet wide in the clear, and is built to accommodate ordinary country traffic—distinct from heavy city traffic, such as described in the bridge at Waterbury, on page 11. The railing on this bridge consists of two bars of one inch pipe on each side, securely fastened to the trusses, and forms a very effectual guard against ordinary travel getting off the bridge between the panel points.

The picture is taken in such a way as to show the ends of the bridge, which present a very ornamental appearance, the portal being curved to form a pleasing outline, and ornamented with a name plate and cast-iron cresting, which, with the ornamental casting on the end posts, give the bridge a very striking appearance when approached from the ends. Of course this ornamentation and curved portal costs more than to build the bridge perfectly plain, but at the same time it adds so much to the general appearance and general style and make-up of the bridge, that parties after once seeing it always adopt it. It costs but little more to have your iron bridges ornamental and tasteful in design and fitted to the location, than it does to build them perfectly plain.

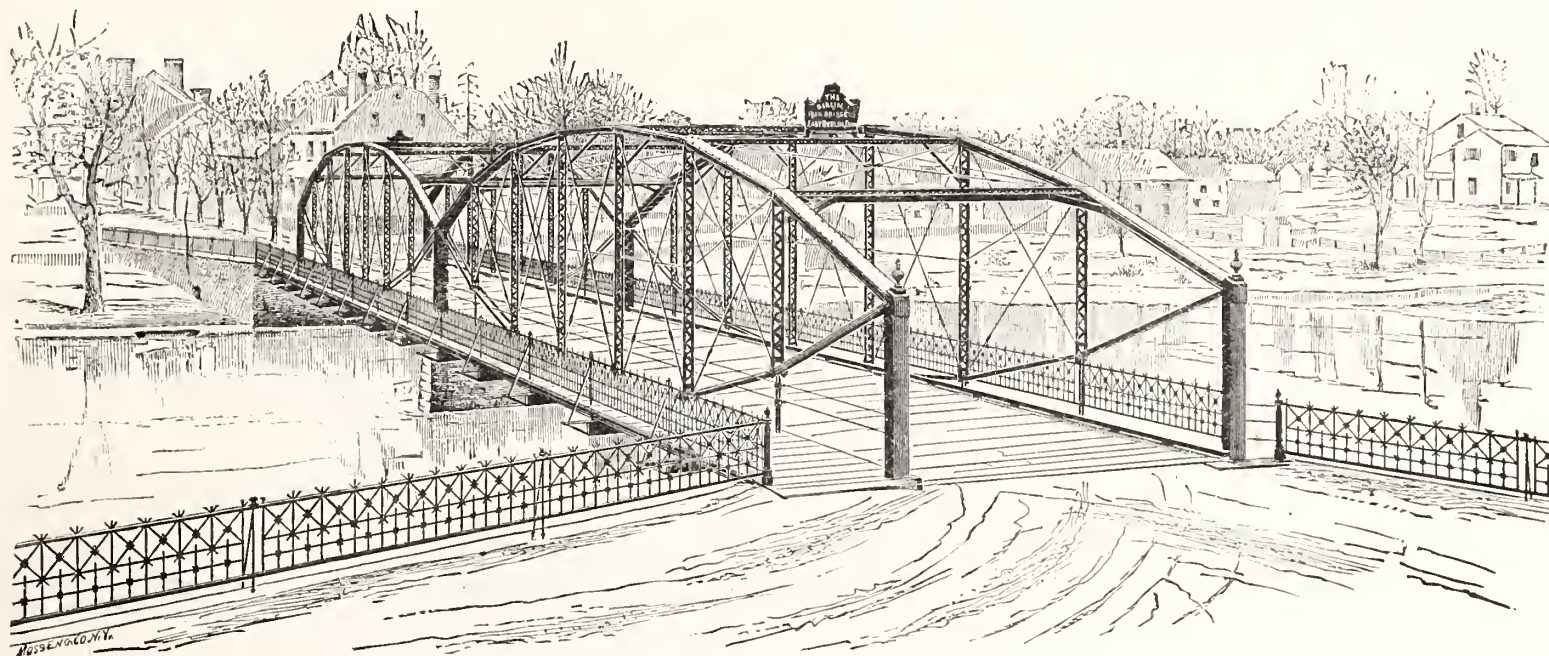


BRIDGE AT KENNEDY, CHAUTAUQUA COUNTY, N. Y. Span, 115 feet. Roadway, 16 feet wide.

BRIDGE AT MONTGOMERY, ORANGE CO., N. Y.

THE CUT on the opposite page does not give a fair idea of the bridge at Montgomery, N. Y., as it was necessary to take the photograph at some distance from the bridge in order to show the approach and the attending surroundings. The bridge is situated at Montgomery, Orange county, N. Y., and consists of two spans, 115 feet each, with a roadway 20 feet wide in the clear, and one sidewalk, six feet wide in the clear. We furnished the whole bridge, including the foundation, consisting of one pier and two abutments, together with the superstructure. The bridge gives the best of satisfaction, and is pronounced by all who have seen it a masterpiece of work.

We wish to call especial attention to the two kinds of railing shown. The outside truss has a lattice railing the same size and construction as the sidewalk railing, but the truss next to the walk has simply two lines of gas pipe. The lattice railing adds very much to the beauty of the bridge, but of course is much more expensive than the pipe railing, but where a bridge is crossed by children, and the travel is heavy and frequent with a walk on one side only, it is generally advisable to use a lattice railing of this kind notwithstanding the extra expense. On country bridges, where the travel is not so frequent, two lines of gas pipe answer every purpose, but we should advise towns under no circumstances to build a bridge without at least two lines of gas pipe, as one line is not sufficient.



BRIDGE AT MONTGOMERY, ORANGE COUNTY, N. Y.
Two Spans, 115 feet each. Roadway, 20 feet wide, One walk, 6 feet wide.

BRIDGE BETWEEN THE CITIES OF SACO AND BIDDEFORD, MAINE.

THIS BRIDGE consists of six spans, 55 feet each, with a roadway 22 feet wide in the clear, and one sidewalk 8 feet wide in the clear. The bridge connects the cities of Saco and Biddeford, Maine, and is subjected to the heaviest city traffic. This is the second bridge which we have built for these two cities across the same stream, and since this photograph was taken we have built a third one at another point further up the stream. This bridge is built in the midst of a lumber district; in fact, lumber is probably cheaper to-day per thousand in the cities of Saco and Biddeford, Maine, than in any other place in the United States, and yet these cities find it more economical to build iron bridges than they do to build wooden bridges.

We also wish to call especial attention to the railing on the outside truss, which consists of two pieces of 6 in. x 1½ in. white pine plained and thoroughly bolted to the truss. This railing gives a good protection on short, low truss bridges; in fact, it has the appearance of closing up the open web work to better advantage than two lines of round iron or pipe, but, of course, is not as lasting, as wood will decay, and has to be replaced in time.



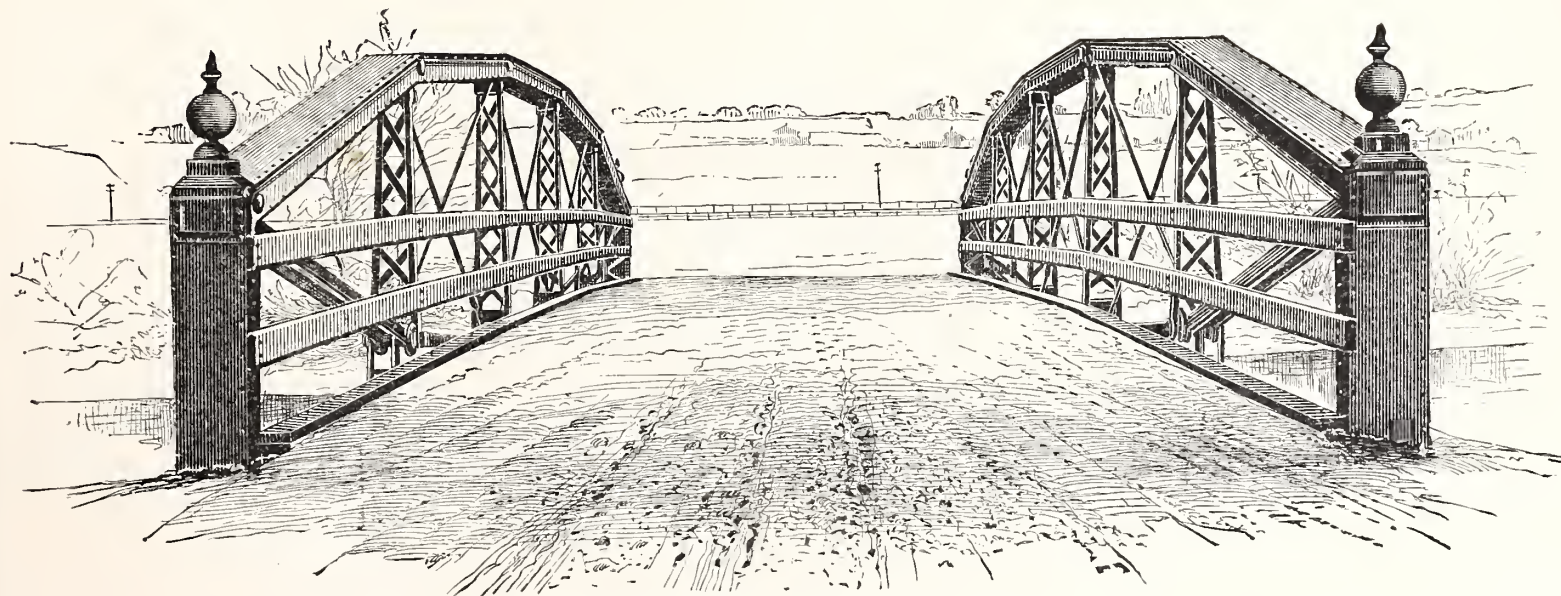
BRIDGE BETWEEN THE CITIES OF SACO AND BIDDEFORD, MAINE.

Six spans, 55 feet each. Roadway, 22 feet wide. One walk, 8 feet wide.

BRIDGE AT JAMESTOWN, N. Y.

THIS BRIDGE represents a very large class of iron highway bridges throughout New England, New York, and Pennsylvania. It consists of one span of 76 feet, with a roadway 16 feet wide in the clear, and is an exact picture of a bridge built by us at Jamestown, N. Y. in 1887. The trusses are 8 feet deep on centers and are pin connected throughout, so that there is no cast iron whatever about the bridge except small washers and the ornamental urns on top of each end post. Jamestown is a very flourishing city, the principal industry being lumber, and yet, notwithstanding the low price of lumber, the authorities find it more economical to build iron bridges than wooden bridges. The bridge has a wooden railing consisting of two pieces of 6 in. x 1½ in. white pine on each side, securely bolted to the trusses, which offers a safe and ample guard on bridges where the traffic is not very severe. A railing of this kind also serves to protect the trusses against careless driving.

The top chord is made out of two channels with a cover plate, latticed on the underside, which lattice work is not to be found in ordinary iron highway bridges except those built by us. It adds very materially to the strength of the chord, and should be insisted upon in all cases where the bridge has a span of over 50 feet. Parties in want of iron highway bridges in spans from 60 feet to 80 feet will do well to visit this bridge and examine it as it is one of the best of its kind in New York State.



BRIDGE AT JAMESTOWN, N. Y.
Span, 76 feet. Roadway, 16 feet wide.

BRIDGE AT SUFFIELD, CONN.

HERE WE have illustrated a deck bridge, consisting of one span of 130 feet, with a roadway 16 feet wide in the clear. This bridge was built by us for the town of Suffield, Hartford County, Conn., in 1888—the illustration being taken direct from a photograph.

This illustration again shows the adaptability of the parabolic truss, the roadway being placed above the truss (forming a deck bridge), instead of below the truss (forming a through bridge), as is the usual case. It also shows the adaptability of the parabolic truss to a deck bridge on a grade. The truss remaining in a horizontal position, but the roadway taking any grade that is desired. This bridge also presents a very ornamental appearance, as can be readily seen from the illustration.



BRIDGE AT SUFFIELD, CONN.
Span, 130 feet. Roadway, 16 feet wide.

BRIDGE AT BINGHAMTON, N. Y.

FOR SHORT spans, say not longer than 35 feet, there is nothing so good as a plate girder bridge. The one represented on the opposite page was built by us in 1886, at Binghamton, N. Y., and consists of one span of 29 feet, with a roadway 32 feet wide in the clear, and two sidewalks, each nine feet wide in the clear. Owing to the fact that the stream across which this bridge is located, at certain seasons of the year, is subjected to very severe freshets, it was desirable not to block up the water way more than was absolutely necessary. Therefore the bridge was made with girders, placed as shown, and the iron joist resting on the bottom flange of the main girders—in this way the depth of the bridge from the top of the plank to the lowest point of iron work did not exceed 10 inches. The bridge presents a very ornamental appearance—the girders between the roadway and sidewalk forming a very effectual barricade.

For city and heavy country bridges, we recommend plate girders for spans as long as 50 feet to 60 feet. They are more expensive than a truss bridge, but the material is concentrated into so few parts that they are stiffer than any other form of bridge.



MADE IN N.Y. CO.

PLATE GIRDER BRIDGE AT BINGHAMTON, N. Y.
Span, 29 feet. Roadway, 32 feet wide. Two walks, each 9 feet.

BRIDGE AT MERIDEN, CONN.

HERE IS represented another style of plate girder bridge which differs from the one shown on page 33, this being a deck bridge, while that shown on page 33 is a through bridge. This bridge is located across the Quinipiac river on Hanover street, in the city of Meriden, Conn., and consists of one span of 50 feet, with a roadway 30 feet wide in the clear, and two sidewalks, each 10 feet wide in the clear.

The distance from the top of the floor of the bridge to the bed of the stream was ample to put in a deck span, and as the travel over the bridge is heavy and very frequent, the authorities decided to use the very best form of bridge which they could get for their location, and therefore adopted a plate girder.

The bridge consists of three girders, one on each curb line and one under the center of the roadway as shown in the cut. These girders are thoroughly connected by floor beams with lateral braces, making a stiff, rigid and very strong construction.

Meriden is one of the most enterprising cities of the New England States, and parties who desire to see a first-class deck-plate girder bridge, in every way, shape, and manner, will do well to examine this bridge.

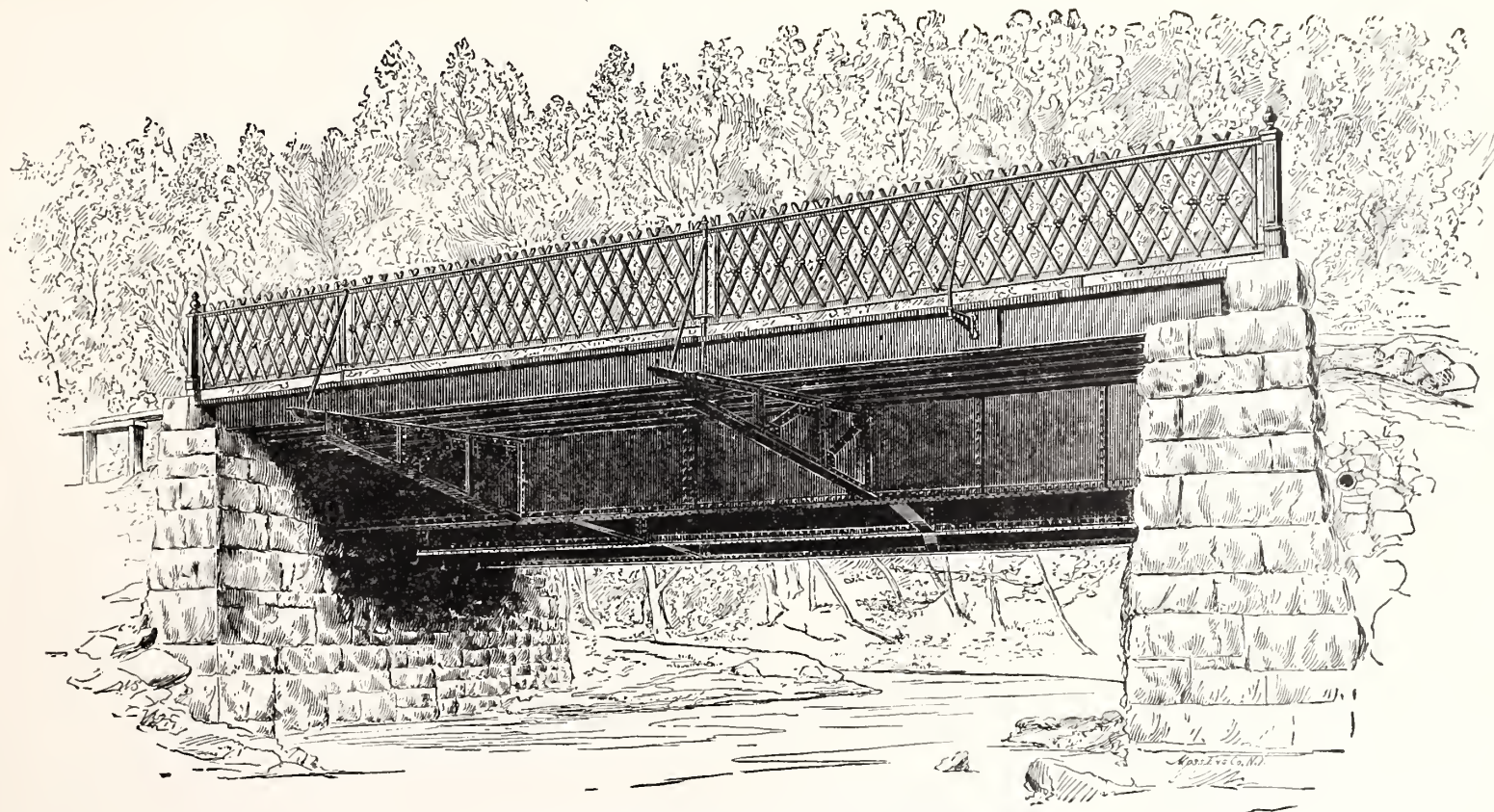


PLATE GIRDER BRIDGE, AT MERIDEN, CONN.

Span, 50 feet. Roadway, 30 feet wide. Two sidewalks, each 10 feet wide.

BRIDGE AT WILLIAMSPORT, PA.

THE CUT on the opposite page shows a square end view and also a side view of the largest iron highway bridge in the State of Pennsylvania, which was built by us in 1885, across the Susquehanna River at Williamsport, Pa. The bridge consists of five spans of 200 feet each, with a roadway 18 feet wide in the clear, and replaced an old suspension bridge which was built there many years ago, and which had become entirely too light to carry the largely increasing traffic.

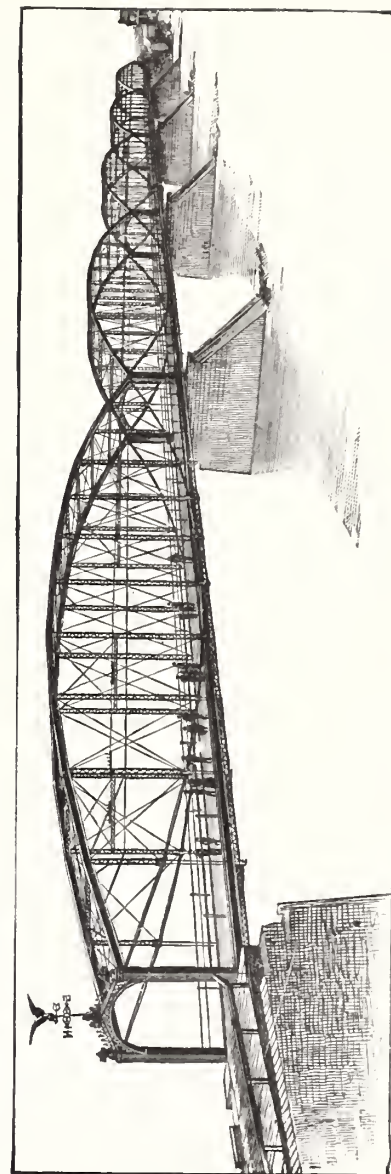
The bridge is owned by a joint corporation, and is used as a toll bridge. Notwithstanding the large expense of taking out the old suspension bridge and putting in a new, first-class, modern iron bridge, the revenue returned to the stockholders has so greatly increased, that the bridge has more than paid the extra cost involved.

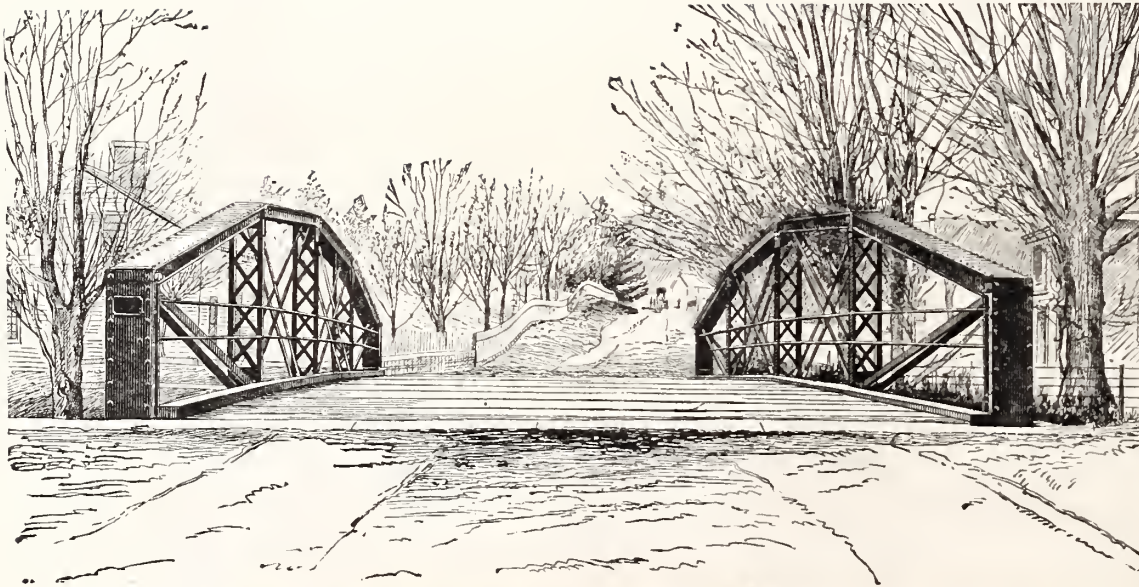
When the public get an idea that a bridge is weak or insufficient, and liable to collapse, they are not apt to cross it unless it is absolutely necessary, and where the revenue derived from a toll bridge depends entirely upon the amount of traffic, it is important that the bridge should be of the best material, of the best construction, and the best design possible to be obtained.



BRIDGE AT WILLIAMSPORT, PA.

Five spans, 200 feet each. Roadway, 18 feet wide.





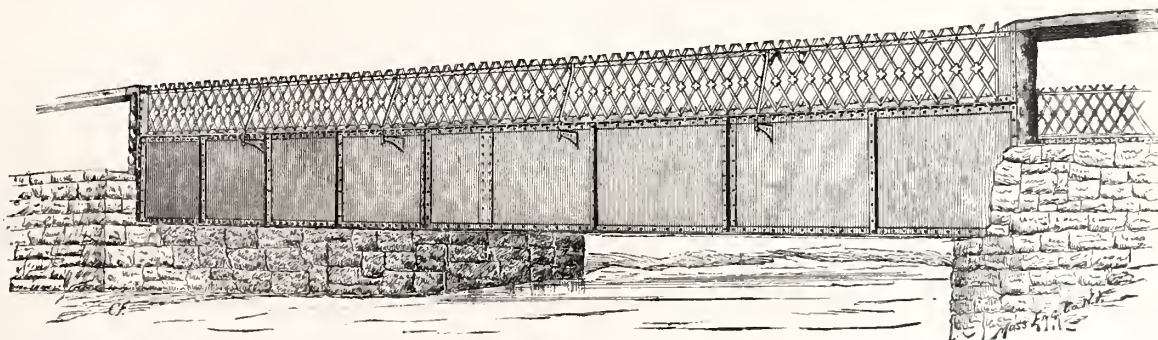
This cut represents a bridge built by us at Waterbury, Conn., in 1884, and consists of one span of 60 feet, with a roadway 18 feet wide in the clear. The bridge is not in the heart of the city, but located in the suburbs. It is, however, subjected to very heavy traffic, being located in a manufacturing district.



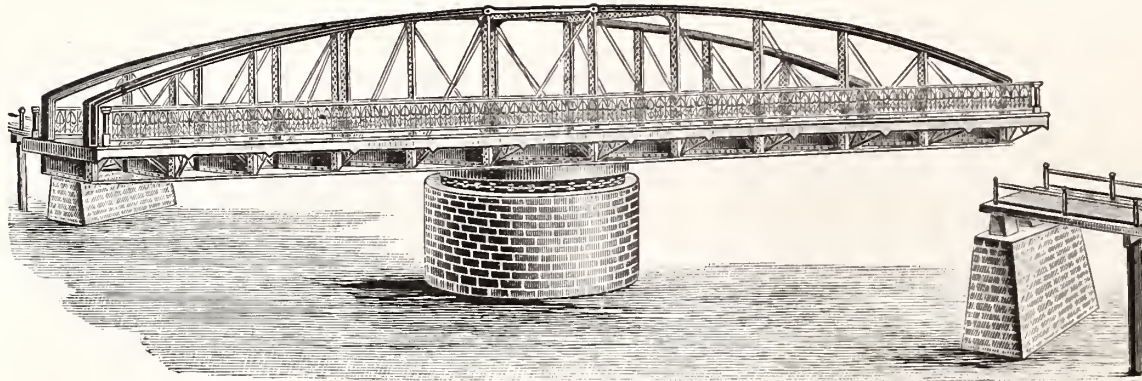
The above cut represents a bridge built by us across the Merrimac River, at Manchester, N. H., consisting of three spans of 140 feet, two spans of 64 feet, and one span of 55 feet, with an upper roadway on the top of the bridge 50 feet wide, and a lower roadway through the trusses, on the bottom of the bridge 18 feet wide. There is also in connection with this bridge a matter of 500 feet of wrought-iron trestle work, which is not shown in the cut. This is the largest iron highway bridge in the New England States without any exception, and is the only bridge having an upper and lower roadway anywhere to be found in the New England States.



The above cut represents a bridge that was built by us at Lowell, Mass., in 1885, and consists of five spans, 153 feet each, with a roadway 32 feet wide in the clear, and two sidewalks, each 7 feet wide in the clear. This bridge was built to open up a large acreage of undeveloped property, and is pronounced by competent judges as the finest piece of iron highway bridge work to be found anywhere in this country. The bridge has a heavy capacity, and is subjected to the heaviest city traffic.



The above cut represents a plate girder bridge built by us at Berlin, Conn., in 1880, consisting of one span of 40 feet, with a roadway 20 feet wide in the clear. The construction is similar to that shown on page 33, except that there are no sidewalks.

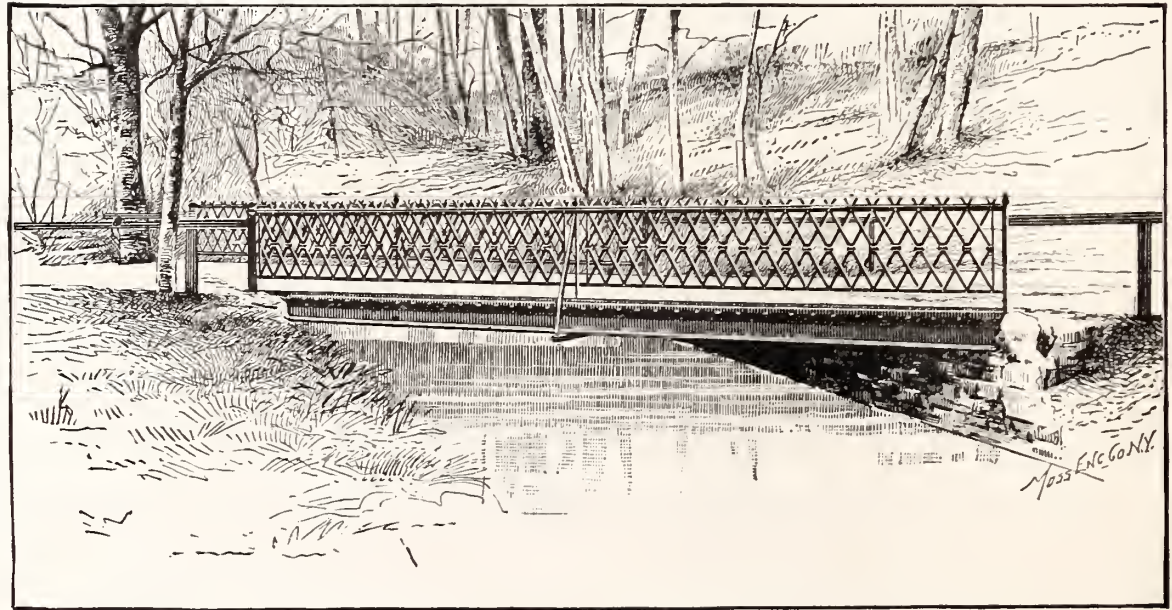


This illustration represents a draw bridge built by us at South Norwalk, Conn., in 1883, and consists of one span of 159 feet, with a roadway 18 feet wide in the clear, and two sidewalks, five feet wide in the clear. The bridge is located just below the N. Y., N. H. & H. R. R. and is in full view of passing trains.

Parties in want of a first-class draw bridge will do well to examine this before purchasing elsewhere.

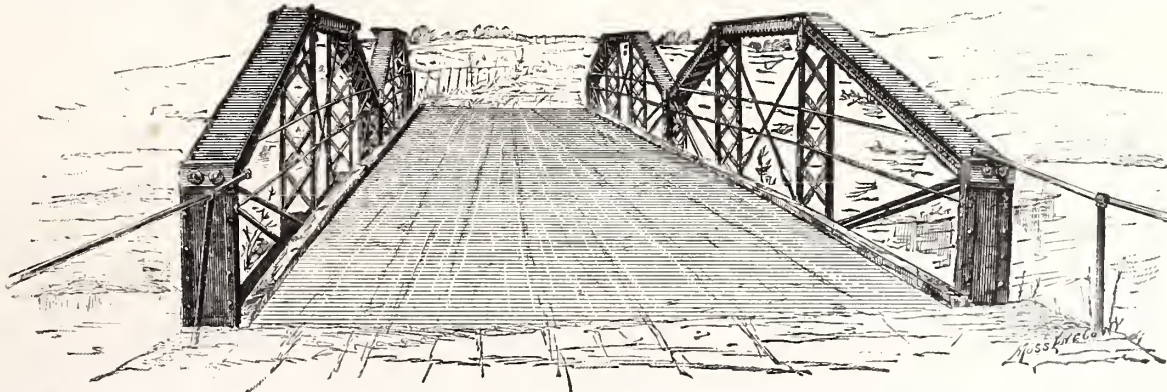
For short creek bridges, up to but not exceeding 30 feet, rolled beams can be used to great advantage. This cut represents a beam bridge built by us at Bristol, Conn., in 1884, consisting of one span of 30 feet, with a roadway 18 feet wide in the clear. The present price of iron places these bridges within the reach of every town.

Some towns have a large number of bridges varying from 15 feet to 30 feet in span, and to those towns we recommend this construction, as the economical price of such bridges places them within the reach of any town, and by building one or two a year, you will soon eliminate all your wooden bridges.

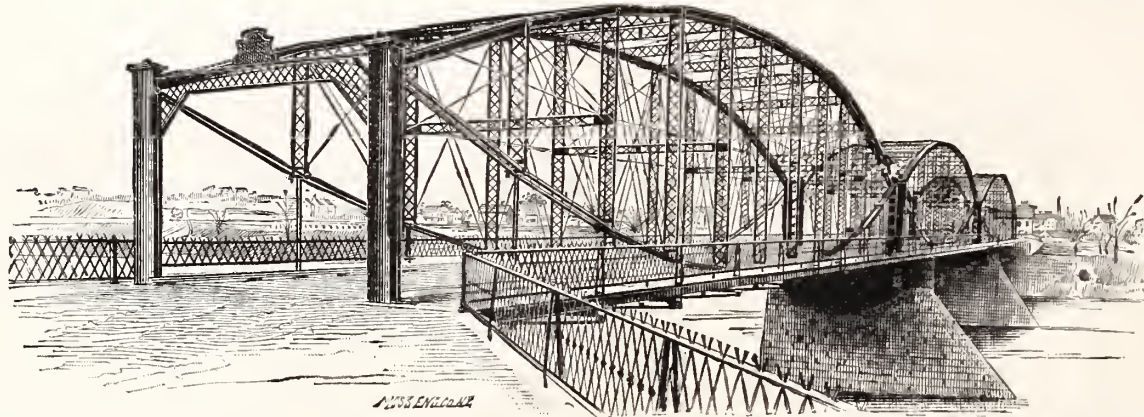




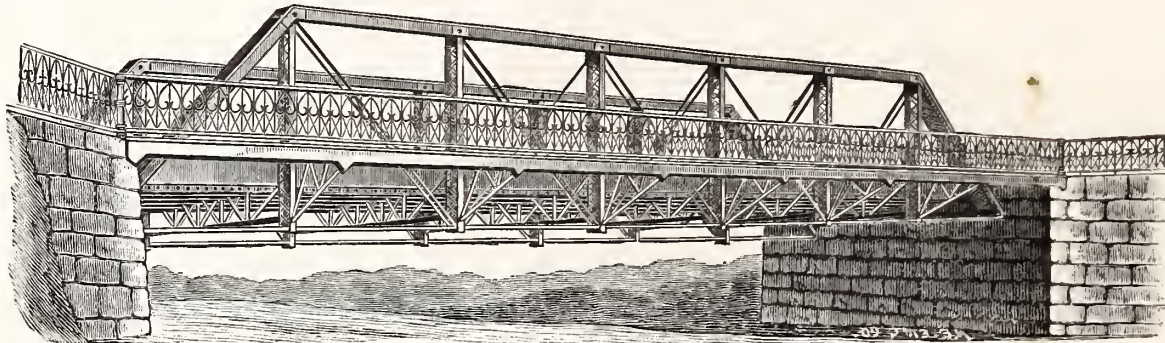
The above cut represents a 65-foot span built by us for Warren County, Ohio, in 1884. The top chord of this bridge is made of two channels latticed, instead of a cover plate as is usually the case, a form of construction we recommend for bridges of this class.



The above cut represents a two span bridge built by us at Westfield Station, Conn., in 1880, and consists of two spans of 40 feet each, with a roadway 12 feet wide in the clear. Each span consists of three panels, and has not only an ornamental appearance, but the bridge has great rigidity.

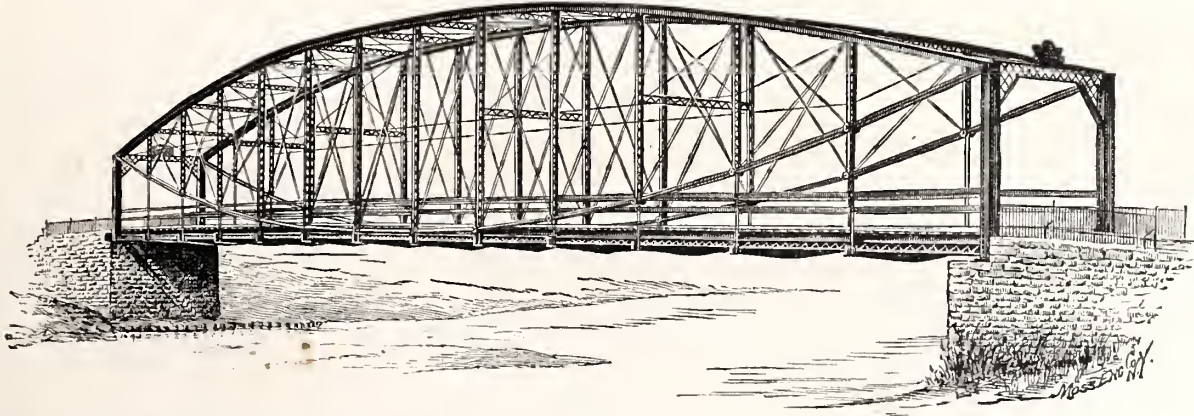
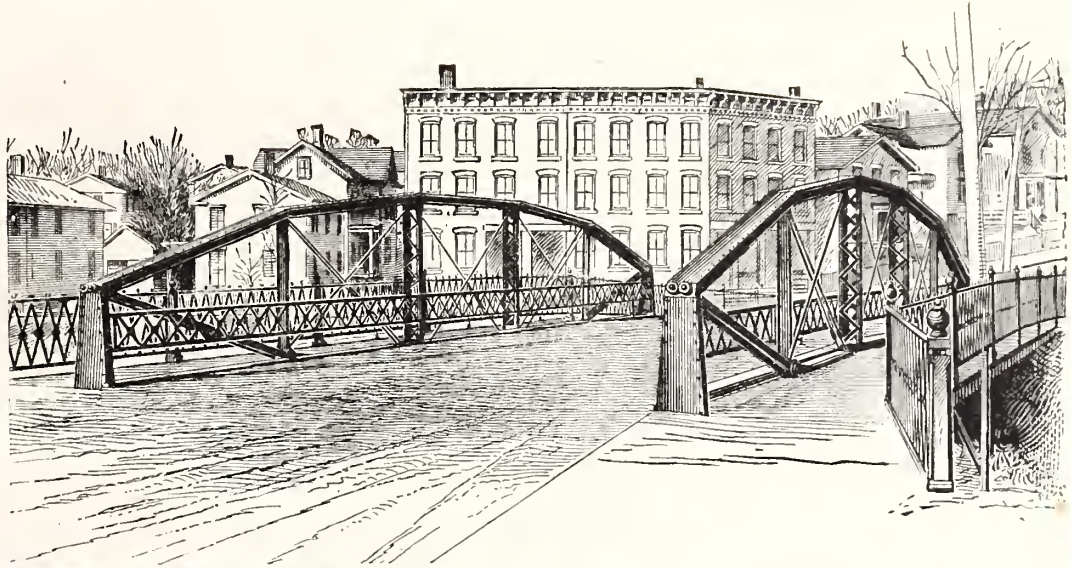


The above cut represents one of the finest bridges to be found anywhere in this country, which was built by us at Nashua, N. H., in 1883, across the Merrimac river, and consists of one span of 170 feet, one span of 160 feet, and one span of 150 feet, with a roadway 20 feet wide in the clear, and one sidewalk, six feet wide in the clear. This was the second bridge we built across the Merrimac river, and since it was finished, we have built three others of greater length than this.



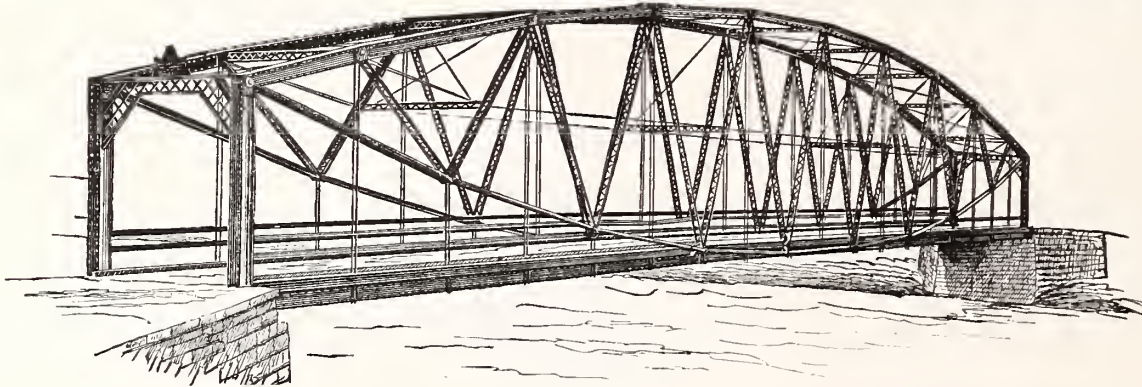
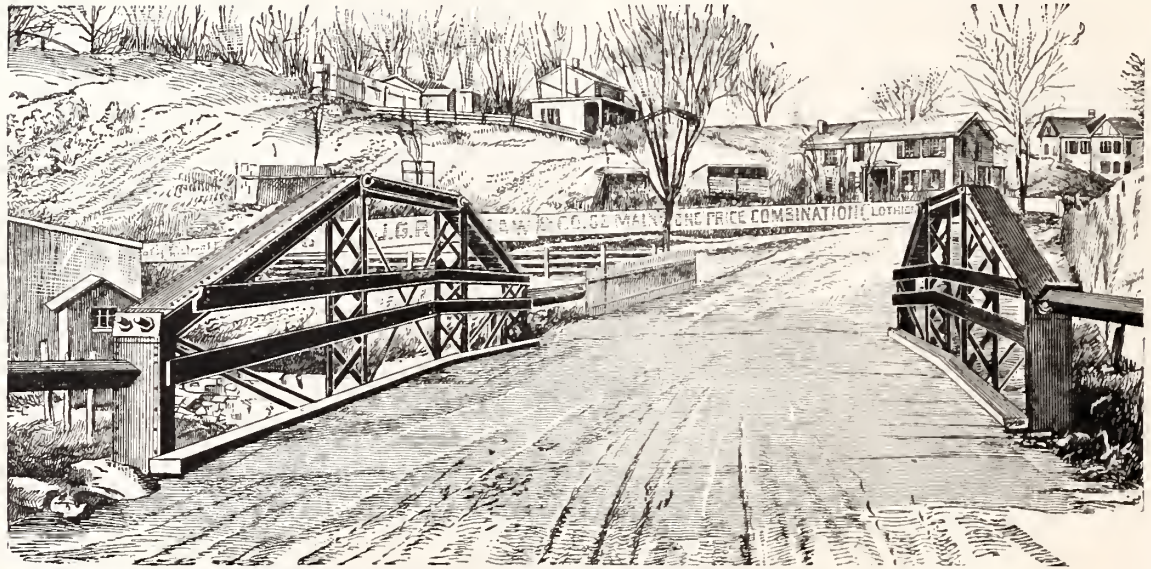
The above cut represents a Pratt truss built by us some years ago for the city of New Haven, Conn., and consists of one span of 101 feet, with a roadway 22 feet wide in the clear, and two sidewalks, each six feet wide in the clear. The floor beams are placed above the lower chord, and securely riveted to the web posts. The bridge presents a very ornamental appearance, and from the rigid connections used, is very stiff.

This cut represents a bridge built by us for the town of Waterbury, in 1879, on Baldwin street, over Mad river. It consists of one span of 50 feet, with a roadway 24 feet wide in the clear, and two sidewalks, each four feet wide in the clear. The bridge is subjected to very heavy travel, and as a large number of school children pass over it daily, it was necessary to put the lattice railing on the trusses as shown—not so much to protect the children on the sidewalk, as to keep them from crossing on the roadway.



This cut represents a 215-foot span, built by us in Warren County, Ohio, in 1880. The bridge consists of one span, 215 feet long, with roadway 16 feet wide in the clear. The cut shows clearly the floor line chord below the floor, which acts to resist the wind strain—a very important item in bridges of this extreme span and narrow width.

Here we have a 45-foot span with a roadway 20 feet wide in the clear, built by us for the town of Derby, Conn.



This cut represents a bridge built by us in Lycoming County, Pa., and consists of one span of 280 feet, with a roadway 16 feet wide in the clear. Please notice that in this bridge we use a triangular web system instead of the ordinary vertical post and inclined tie web system, as shown on the bottom of page 41. In this bridge the floor beams extend lengthwise of the bridge on the axis of the truss, and the joists are placed crossways—a very advantageous construction for long spans and narrow roadways.

SUSPENSION BRIDGES.

THERE ARE many locations to which none of the bridges shown heretofore are adapted, and where the peculiarities of the location demand a suspension bridge. The suspension bridge is especially adapted for long spans, where, either on account of insufficient foundation, or the danger of heavy ice carrying away the piers, it is found impracticable to put in any piers between the banks. There are also locations where a rock anchorage is easily found, and the expense of a suspension bridge is much less than an ordinary truss bridge.

The suspension bridge differs from a parabolic truss bridge in the fact that it is necessary to anchor the cables to a mass of masonry, while in a parabolic bridge the cable anchors itself against the upper chord of the truss; the pull of the cable or lower chord, and the push of the arch or upper chord being equal and in opposite directions, one counter-balances the other.

The cables of a suspension bridge are not of sufficient stability to carry heavy concentrated loads, and therefore it becomes necessary in order to stiffen the bridge, to put in what is known as a stiffening truss, which distributes a concentrated load over several points. Some of the largest bridges in the world are built on this plan, noticable of which is the beautiful structure connecting New York and Brooklyn, known as the "Brooklyn Bridge," and also the bridge at Niagara Falls, built many years ago by the elder Roebling. For long spans, and where the expense of piers is large, there is no bridge so economical and so well adapted as the suspension type.

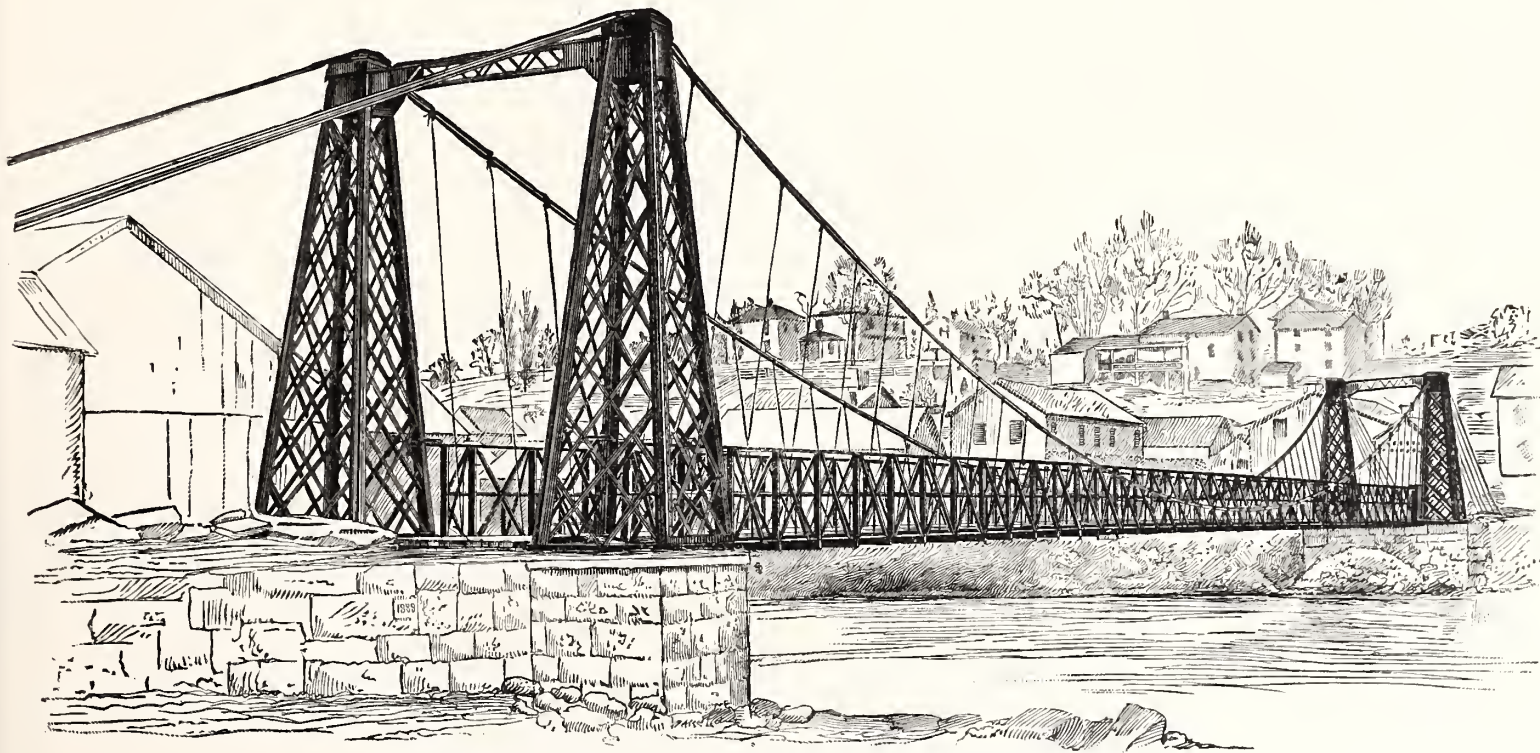
We are prepared to present plans and estimates for suspension bridges, having had a large experience in this class of work, and illustrate on the two following pages two of these structures, built by us within the two last years.

BRIDGE BETWEEN CHESTERFIELD AND AUSABLE, N. Y.

WE HAVE here illustrated a bridge built by us in 1888, between the town of Chesterfield, Essex County, N. Y., and the town of Ausable, Clinton County, N. Y. The bridge consists of one span of 240 feet, center to center of towers, and was built to replace an old suspension bridge, which succumbed to the action of the elements.

One end of the bridge is anchored into the solid rock, but on the other end it was necessary to build a heavy stone pier into which the cables are securely anchored. In many locations this extra masonry for anchorages is found unnecessary, as the solid rock is found so near the surface that it makes a good and suitable buttress to pull against, and much better than when artificially constructed of masonry.

The stiffening truss of the bridge shown is made out of plates and angles, the bridge being divided into 48 panels, each 5 feet, and connected to the cables at each panel point by a stirrup, which connects to the floor beam instead of the truss—a form of construction which commends itself. The bridge is very stiff, both vertically and laterally, and seems to meet the wants of the public in this location equally as well as a more expensive structure



BRIDGE BETWEEN CHESTERFIELD AND AUSABLE, N. Y.

One Span, 240 feet.

BRIDGE AT SHELDON, VT.

THE CUT on the opposite page gives but a poor idea of a suspension bridge built by us during the year 1888 at Sheldon, Vt., consisting of one span of 250 feet center to center of towers, with a roadway 16 feet wide in the clear. The photograph from which this cut was made was taken when the snow was on the ground, and therefore does not show the construction as clearly and as forcibly as it should. The bridge is located in a farming region over a terrific gorge, both ends being anchored in solid rock.

The Missisquoi River at this point has rocky banks so that the expense of anchorage was very small and made this form of construction the most economical that could be adopted. The bridge is not only firm and rigid vertically, but has great stability laterally, and is pronounced by the town authorities equal in rigidity and stability to any truss bridge which they ever saw. By making the stiffening truss of a suspension bridge heavy and strong, the panels short and well braced, a suspension bridge can be made of nearly equal rigidity to a truss bridge. There is no form of bridge more pleasing in outline than a suspension bridge.



BRIDGE AT SHELDON, VT.
One Span, 250 feet. Roadway, 16 feet wide.

CONCRETE BRIDGES.

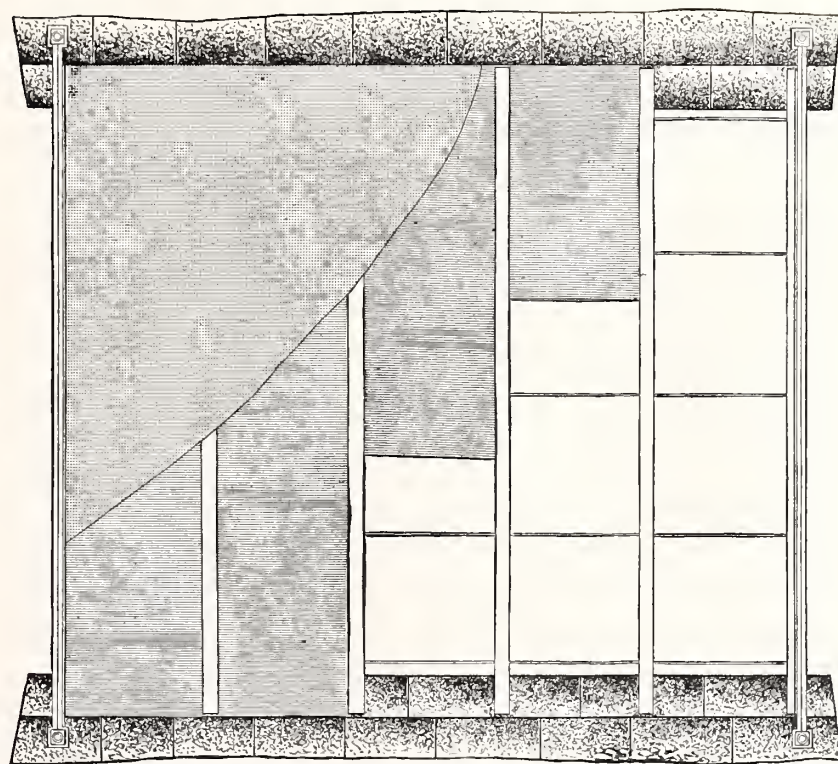
FOR MANY years it has been the practice of engineers, when wishing a permanent bridge, to build a stone arch. Often stone arches have been built over streams where they contract the water-way so much as to cause great damage, and sometimes the bridge itself has been completely washed away. It is not always possible to get sufficient water-way for a stone arch, and it becomes necessary to use an iron bridge. Many towns and cities object to iron bridges on account of the wooden floor which it is necessary to renew occasionally, owing to decay and wear. After a large number of experiments during the past twenty years, we have succeeded in designing an iron bridge which overcomes the objection to a stone arch, viz: narrowing the water-way, and at the same time overcomes the great objection to any bridge with a wooden floor which will wear out. We have designed a bridge as shown in the illustrations on pages 51, 53 and 55, which has no wood work about it in any part to wear out or to decay.

These bridges have now been in use in some places for over 15 years, without a single dollar being spent on them for repairs of any kind. They are in every way equal in wearing and lasting properties to the stone arch, and we see no reason why they should not practically last forever. The only possible objection to be urged, is that the iron work on the underside will occasionally require painting, but as the corrugated iron arches which we use are heavily galvanized especially for this class of work, we see no reason why these should not last indefinitely and never require painting.

These corrugated iron arches used by us are much superior to buckle plate, notwithstanding buckle plate is thicker, for the reason that the vibration of the buckle plate tends to crack the concrete covering, and as soon as this cracks the bridge is ruined.

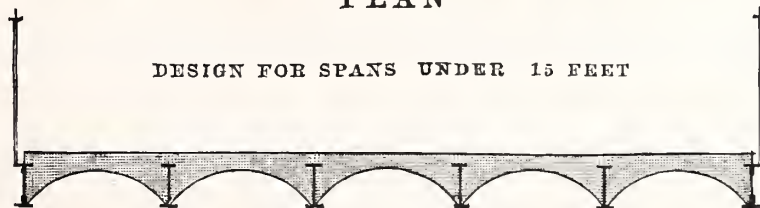
In the case of the corrugated iron arch we have no such vibration, and even if the corrugated iron arch should rust out in years, we have a concrete arch remaining to carry the load of the bridge, which is amply sufficient.

For small concrete bridges, up to 25-foot spans, we place the stringers lengthways of the bridge, as shown on page 51, resting directly upon the abutment. Between these stringers, and resting on the lower flange, we place corrugated iron arches, as shown in the cross section, and above the arch we fill in with concrete. The beams are fastened across the bridge by wrought-iron rods secured to the lower flanges, so as to keep the iron work in position while the concrete is being put in place. On the outside we put an ornamental lattice railing, as shown, securely fastened to the outside girder. On the top of the concrete covering we put a wearing course or pavement made of Trinidad asphalt.

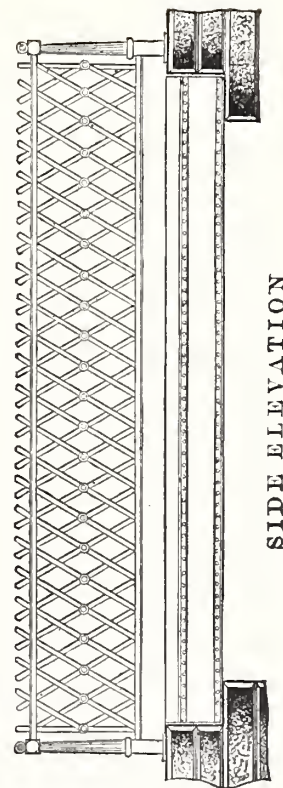


PLAN

DESIGN FOR SPANS UNDER 15 FEET



CROSS SECTION



SIDE ELEVATION

CONCRETE BRIDGE.

CONCRETE BRIDGES—Continued.

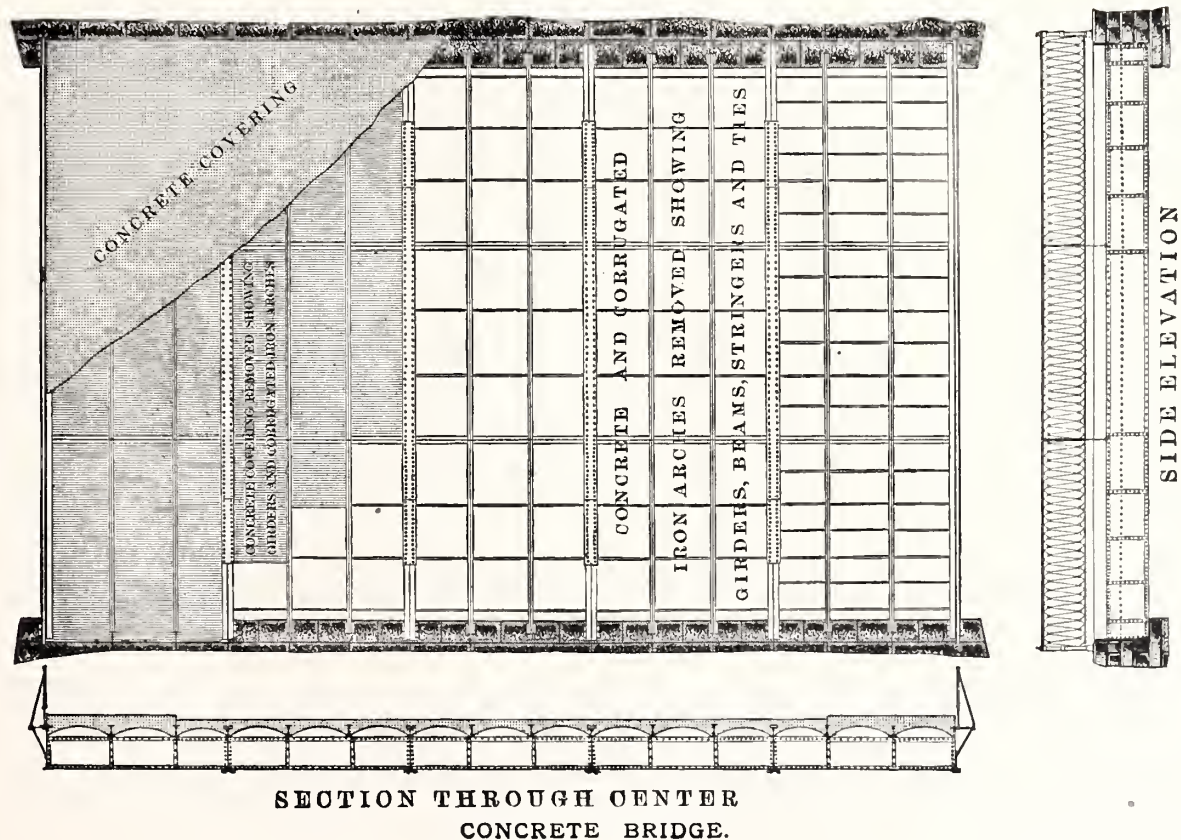
HERE WE have a construction equal to the best stone arch for spans of over 25 feet, and giving unlimited water-way—a plan which commends itself to the careful consideration of towns in want of something more permanent than an ordinary iron highway bridge with a wooden floor.

On page 53 we show the details of construction of a concrete bridge, such as we would use in spans of from 30 to 60 feet. The main girders are placed lengthways of the bridge, resting directly upon the abutments, and between these are placed floor beams, about every 12 or 15 feet apart, upon which rest the stringers, which carry on their lower flanges the corrugated iron arches. Upon these corrugated iron arches we put the concrete, with asphalt covering, the same as noted on page 50.

For locations where there is a walk on one or both sides, we extend the girders at the curb line up through the concrete, in such a way as to form a curb line between the roadway and the sidewalks, raising the sidewalks from six to twelve inches, as required. In some cases we put a lattice railing between the roadway and the sidewalk, but it is very seldom that this condition is required.

We have built over 30,000 square feet of these concrete bridges in the last twenty years, at Bangor, Me., Norfolk, Conn., Westerly, R. I., Stonington, Conn., Enfield, Conn., Taunton, Mass., New Britain, Conn., Castletown, Vt., Bristol, Conn., Torrington, Conn., Brockton, Mass., Berlin, Conn., and several at Waterbury, Conn. All of these are in continual use for heavy traffic, and every one is giving entire satisfaction. We do the whole work ourselves, including the concrete filling and the asphalt covering, with our own men and our own tools. After an experience extending over the past twenty years, and a long series of expensive experiments, we are satisfied that we have arrived at a correct mixture of concrete and asphalt for this class of work, which will stand all time.

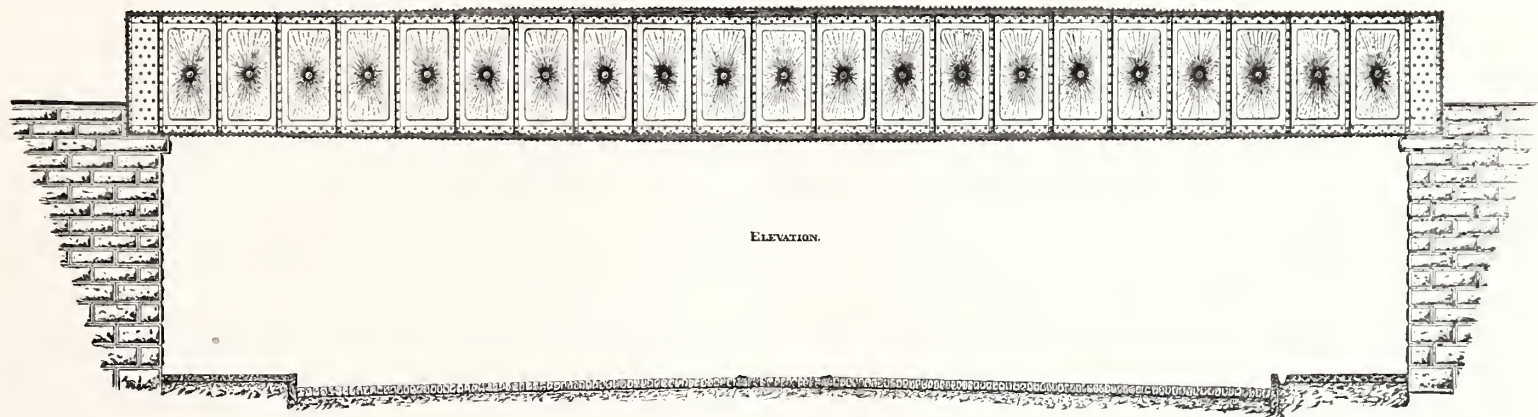
When desired, instead of using an asphalt covering over the concrete, we can put on a granite block pavement, the concrete being arranged to receive this. One of the bridges which we have built at Brockton, Mass., is completed in this way.



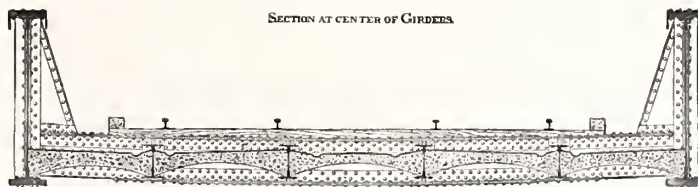
BRIDGE AT ASYLUM STREET, HARTFORD, CONN.

HERE WE have illustrated the highest art of the bridge builder. At an expense of \$500,000, one-half paid by the city of Hartford, and one-fourth each by the N. Y., N. H. & H. R. R. Co. and the N. Y. & N. E. R. R. Co., the State of Connecticut ordered the grade of Asylum Street, at Hartford, Conn., separated from the grade of the railroad tracks by carrying the railroad tracks over the street. There is probably not a railroad crossing in this country where there is such heavy and frequent passing of teams and pedestrians as at this point, and it became absolutely necessary to separate the two grades. The location did not admit of a stone arch, there not being sufficient room to get a proper rise, so that the authorities adopted the concrete bridge as the very best thing possible to be obtained.

The bridge as shown, consists of a double track, plate girder, the girders being placed 32 feet apart on centers, with floor beams and stringers, carrying a double line of railroad between. Between the iron stringers are placed corrugated iron arches, and above this asphalt concrete, making a bridge as strong and as rigid as a stone arch. Each railroad is provided with a bridge of the same construction as that shown on page 55. Each of the four girders on these two bridges weighed 40 tons, or the four girders weighed 160 tons in the aggregate—*the heaviest single plate girder ever built in this country.*



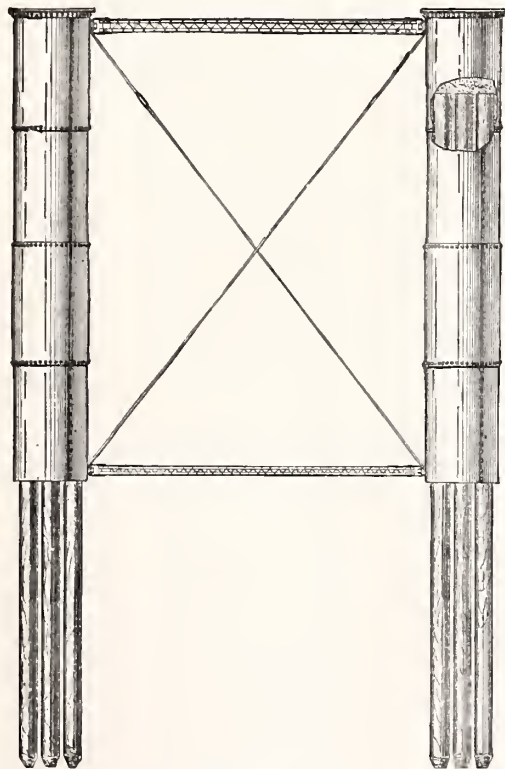
SECTION AT CENTER OF GIRDEES



BRIDGE AT ASYLUM STREET, HARTFORD, CONN.

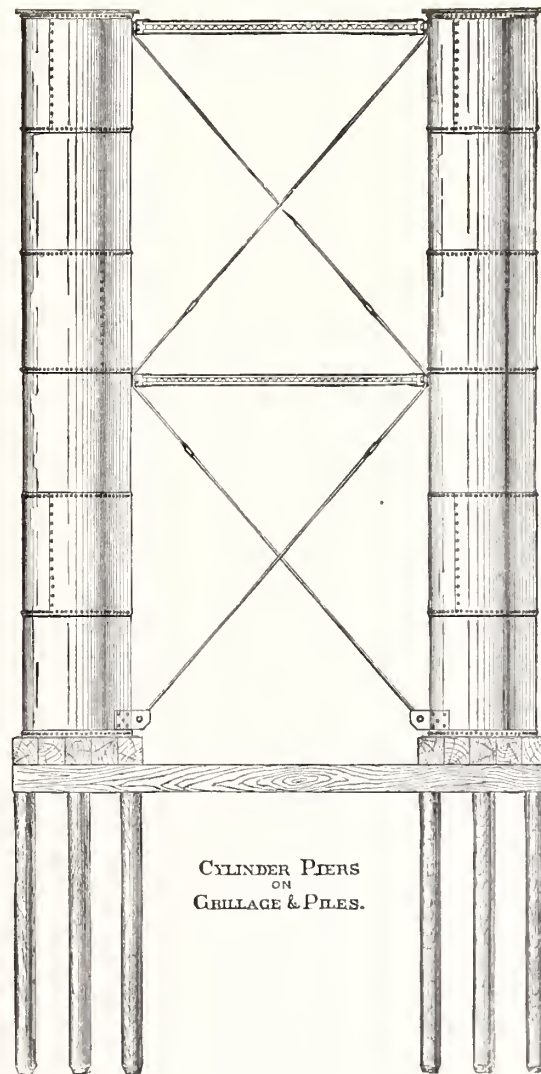
CYLINDER PIERS.

IT OFTEN becomes advisable in building bridges, where the foundations are expensive or treacherous, to use iron piers rather than stone. The designs represented on the opposite page are used by us to meet this necessity. This class of piers are especially adapted to mud bottoms. The shell of the pier is constructed of boiler iron from one-quarter to one-half inch in thickness, according to circumstances. This cylinder is settled as far into the mud bottom as circumstances will admit, and then on the inside of this cylinder is driven a cluster of from three to five piles, according to the size of the cylinder and the local conditions. Around these piles, and completely filling the cylinder, is placed concrete, well rammed into place, forming practically an iron and stone column with a firm and secure foundation. One of these cylinders is placed under each end post, or on each side of the bridge, and where the height of the cylinder requires, they are braced and tied together as shown. Piles put in the bottom of the stream and protected in this way, will last for thousands of years, so that we cannot see why the construction is not equally as good in every way as stone, and at the same time is much cheaper. The concrete bridge built by us in 1884, between Westerly, R. I., and Stonington, Conn., is placed on cylinder piers of the construction shown. Within a few weeks after the completion of this bridge, the water arose in the Pawcatuck river higher than it had been known to rise in many years, so that all access to the bridge was cut off, and the bridge itself was partially submerged. The entire force of the current, which was very swift and rapid, beat against the sides of the bridge. The bridge went through this trying ordeal safely, showing that these cylinder piers are fully as capable of resisting floods as stone piers.



CYLINDER PIERS
WITH
PILES & CONCRETE.

CYLINDER PIERS.



CYLINDER PIERS
ON
GRILLAGE & PILES.

IRON BUILDINGS AND IRON ROOFS.

WITH THE increasing scarcity and cost of good timber, and the greater liability of wooden buildings and roofs to fire, there has arisen, of late years, a large demand among manufacturing corporations for iron buildings and iron roofs. It is almost impossible in some parts of the country to get proper timber for roof trusses, except by using southern pine, and even the quality of this in the past few years has seriously deteriorated. There are very few manufacturing buildings but what carry their shafting from the roof trusses overhead, and when these roof trusses are made of wood, the unequal swelling and shrinking of the different parts will soon throw the shafting out of line, and thus increase the expense of power. Wooden roofs and wooden buildings are also expensive on account of the cost of insurance. It is almost impossible to get properly seasoned timber for roof work at the present time, so that very soon a wooden roof becomes so badly season cracked in parts, that it is absolutely unsafe. For this reason many large manufacturing corporations have adopted iron trusses, and we endeavor in this portion of our catalogue to illustrate a few of the many different kinds of iron roofs which we have already built.

There are as many different styles and forms of iron trusses for roof purposes, as there are different needs and different building outlines, from the plain hip roof to the mansard and arched forms of truss, which one often sees in depots and train sheds. Generally speaking, where iron trusses are used to cover manufacturing buildings, it is necessary to make the trusses to carry shafting, and often it becomes necessary to give them sufficient capacity to move heavy loads by means of travelers, trolleys, derricks, etc., etc. Iron is particularly well adapted for this class of work, and a good iron roof is as much a scientific construction as a good iron bridge.

IRON BUILDINGS AND IRON ROOFS—Continued.

The trusses should be well braced and well stiffened, not only against vertical motion, but also against lateral motion. The contraction and expansion of the iron work is uniform, so that it does not move the shafting and get it out of line. The iron work cannot get on fire and burn down, and the general appearance of an iron roof is much more ornamental than the old fashioned cumbersome wooden roof.

We illustrate in the few following pages, some of the many iron roofs and iron buildings built by us, and invite parties in want of work of this class, to go and see these buildings and these roofs for themselves, or correspond with the parties for whom they were built.

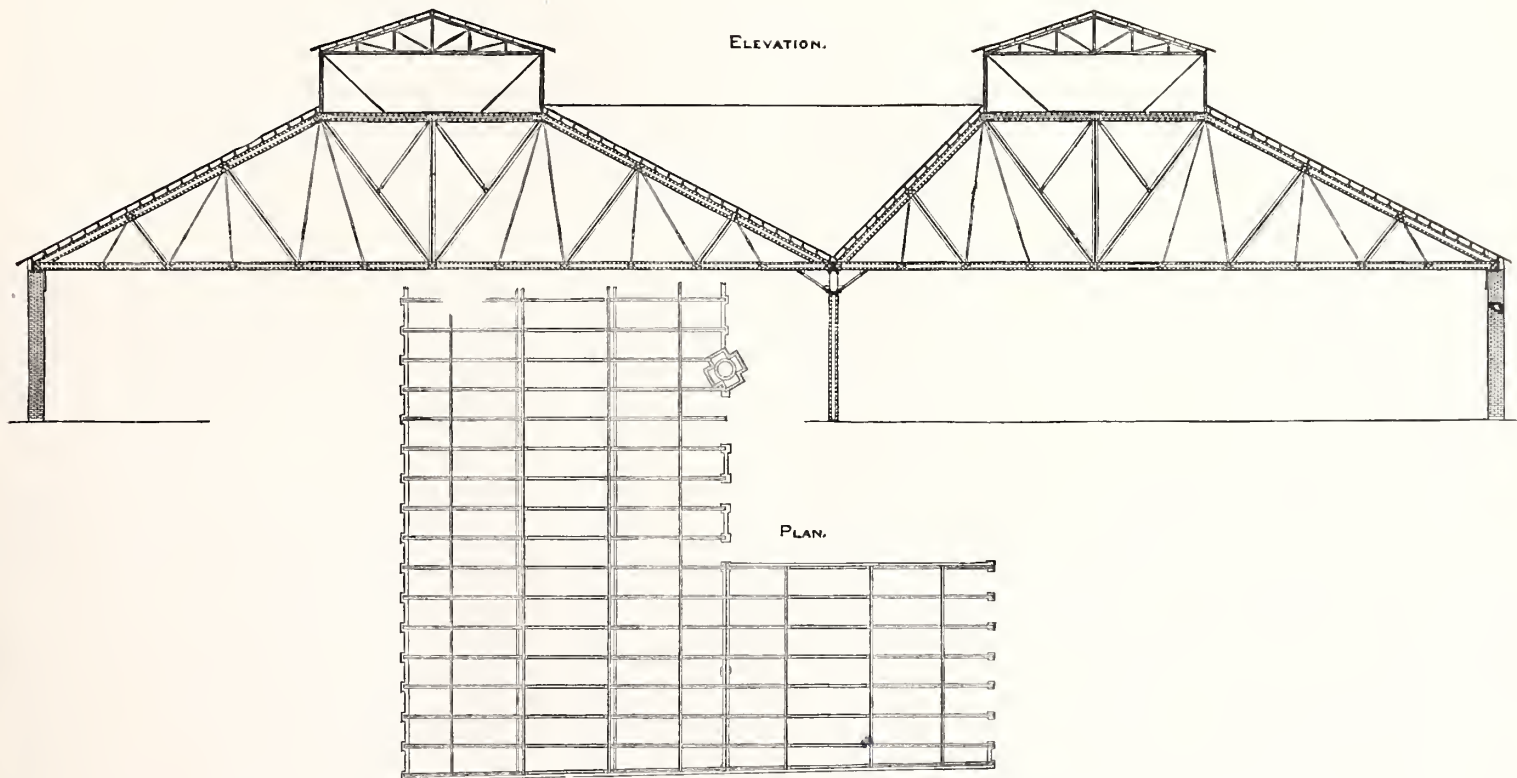
We are prepared to make plans, specifications, and estimates for all kinds of work in this line, and having had more experience in this class of work than any other company in America, we feel sure that we can give satisfaction.

Parties contemplating new buildings, especially for manufacturing purposes, will find it advisable to correspond with us for plans and estimates. We keep a corps of competent civil engineers, skilled in this class of work, constantly employed, and when advisable, can send an engineer to consult with parties contemplating any work in our line. We are pleased to make special plans and estimates whenever desired, and are always glad to send one of our engineers with parties who wish to examine any work built by us, in order to explain the work.

IRON ROOF FOR THE ANSONIA BRASS AND COPPER CO., ANSONIA, CONN.

THE ILLUSTRATION on the opposite page shows an iron roof, built by us in 1887, for the Ansonia Brass and Copper Company, at Ansonia, Conn., and now in use as a rolling mill. The trusses are designed to conform in outline to other adjacent buildings, the ventilator and skylight being placed as shown in the cut. The buildings consist of two parts, that shown on the left being 250 feet long by 110 feet wide, and that portion on the right being 91 feet long by 70 feet wide, the latter portion being made irregular, so to make the contour of the end wall the same on each side of the building. The trusses are placed 10 feet apart, and have a live load capacity of four tons over that portion of the mill where the light machinery is located, and nine tons over that portion of the mill where the heavy machinery is located. These trusses are also designed to carry heavy shafting, and are very firm and rigid.

Between the two buildings are placed plate girders, resting on walls at the end and columns at the center, so to allow free intercourse between the two parts. The roof trusses are connected by wooden purlins, and covered with matched boards with a tin roof. Where the conditions of span and loading are extreme, as in the present case, an iron roof can be built, nearly, if not quite as cheaply, as a wooden roof.



IRON ROOF FOR THE ANSONIA BRASS AND COPPER COMPANY, ANSONIA, CONN.

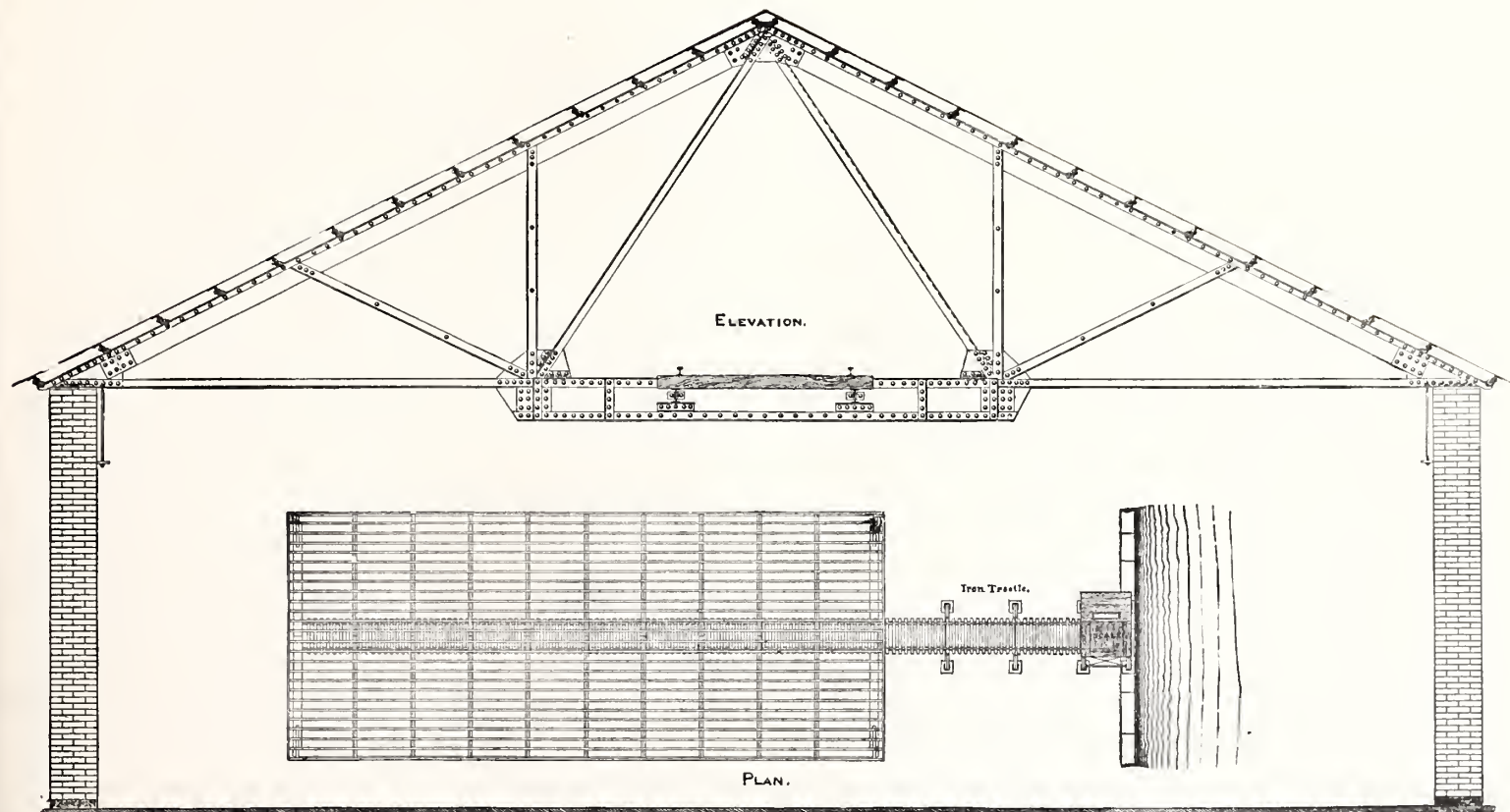


IRON ROOF AND TRESTLE WORK FOR THE BURLINGTON CITY WATER WORKS, AT BURLINGTON, VT.

THIS BUILDING is designed for use in storing coal—the severe winter weather in this climate necessitating the storing of large quantities of coal during the winter months, as navigation closes very early in the season. The building is 98 feet long by 40 feet wide, and is connected with a dock by a trestle 42 feet long, which trestle carries a car, and at the dock end a pair of scales, to use in weighing the coal. The roof is so constructed that the cars can pass through the whole length of the building, thus allowing the coal to be spread uniformly, and saves much expense in handling.

Between the roof trusses at the center, are placed stringer beams, upon which the ties and rails are laid, the same as in the ordinary railroad bridge, and upon these rails the dump cars are free to travel back and forth. The roof trusses are connected with iron purlins, and covered with corrugated iron, making a building absolutely fire-proof, for the reason that there is not a particle of wood work about it to take fire, except the ties for the car track.

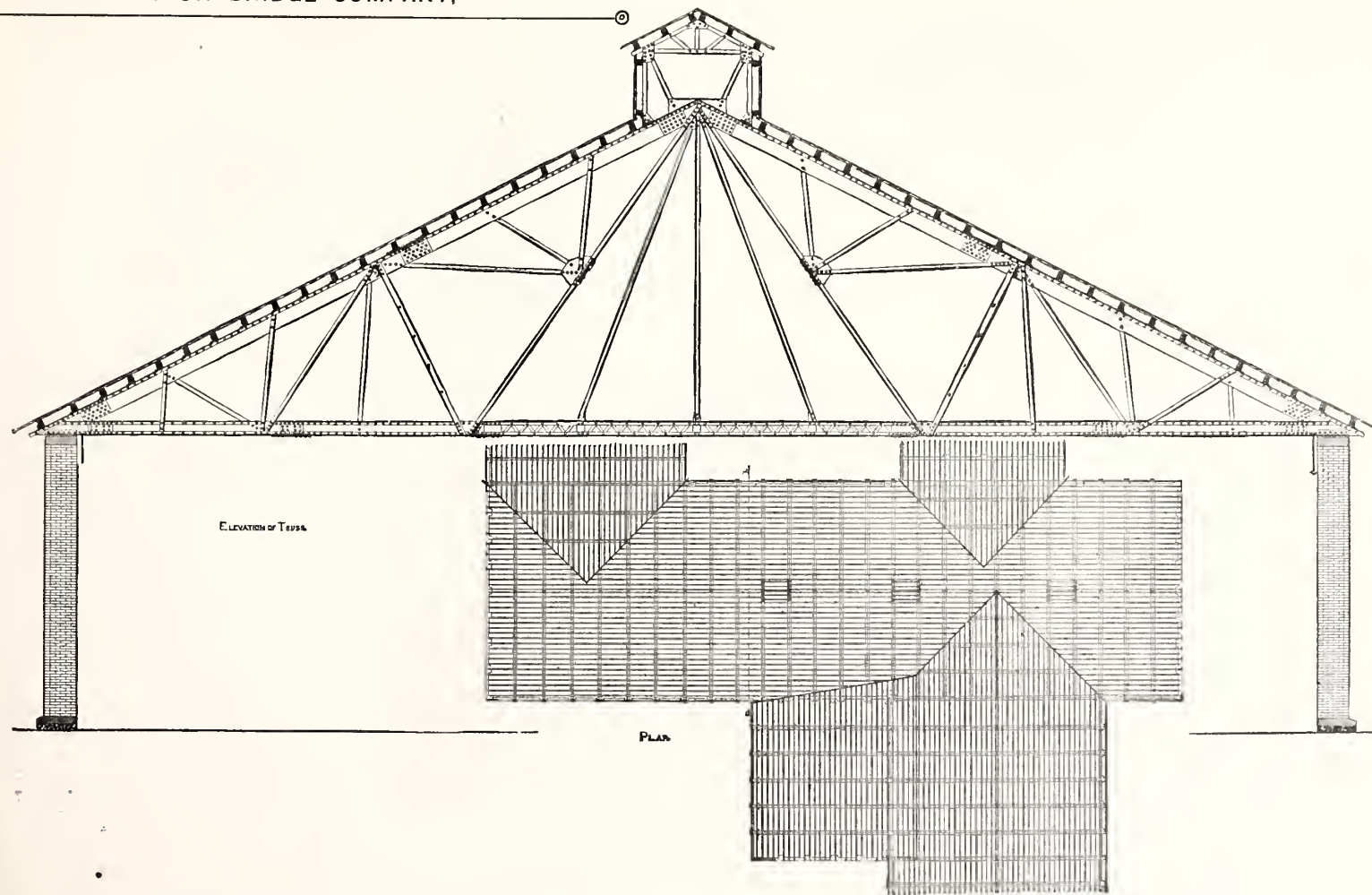
This plan commends itself particularly to parties storing large quantities of coal, as making a safe and economically constructed building.



IRON ROOF AND TRESTLE WORK FOR THE BURLINGTON CITY WATER WORKS, BURLINGTON, VT.

IRON TRUSSES FOR THE ALUMINUM BRASS AND BRONZE COMPANY, AT BRIDGEPORT, CONN.

THE CUT on the opposite page represents a general outline of the buildings of the Aluminum Brass and Bronze Company, at Bridgeport, Conn., but owing to the limited amount of space, we are unable to show the entire layout of their buildings, which are probably as well, if not the best designed manufacturing buildings for the purpose intended, to be found in this country. The main mill is 84 feet wide and 267 feet long, with a hot mill 76 by 70 feet at one end, and on the opposite diagonal corner, a muffle room, 84 feet wide by 120 feet long, the whole connected together in such a way that there are no partition walls or columns between the different buildings, the roof trusses being arranged to support the overhead work, leaving access between the different rooms clear and uninterrupted. In one corner, next to the muffle room and opening through, is the shipping room, and opposite to the muffle room is the boiler house, with a fire-proof wall between this and the main mill, which fire-proof wall extends to the peak of the roof, thus cutting off the danger of any mischance fire originating from the boilers. These trusses are all designed to carry heavy shafting, and over certain portions of the mill, to carry such loads of machinery as are necessary in moving rolls, etc. The trusses are connected by wooden purlins, and covered with matched boards and silicate covering. The side walls are of brick, 16 inches thick, except at the point supporting the roof trusses, which are thickened by a pilaster on the outside to 24 inches.

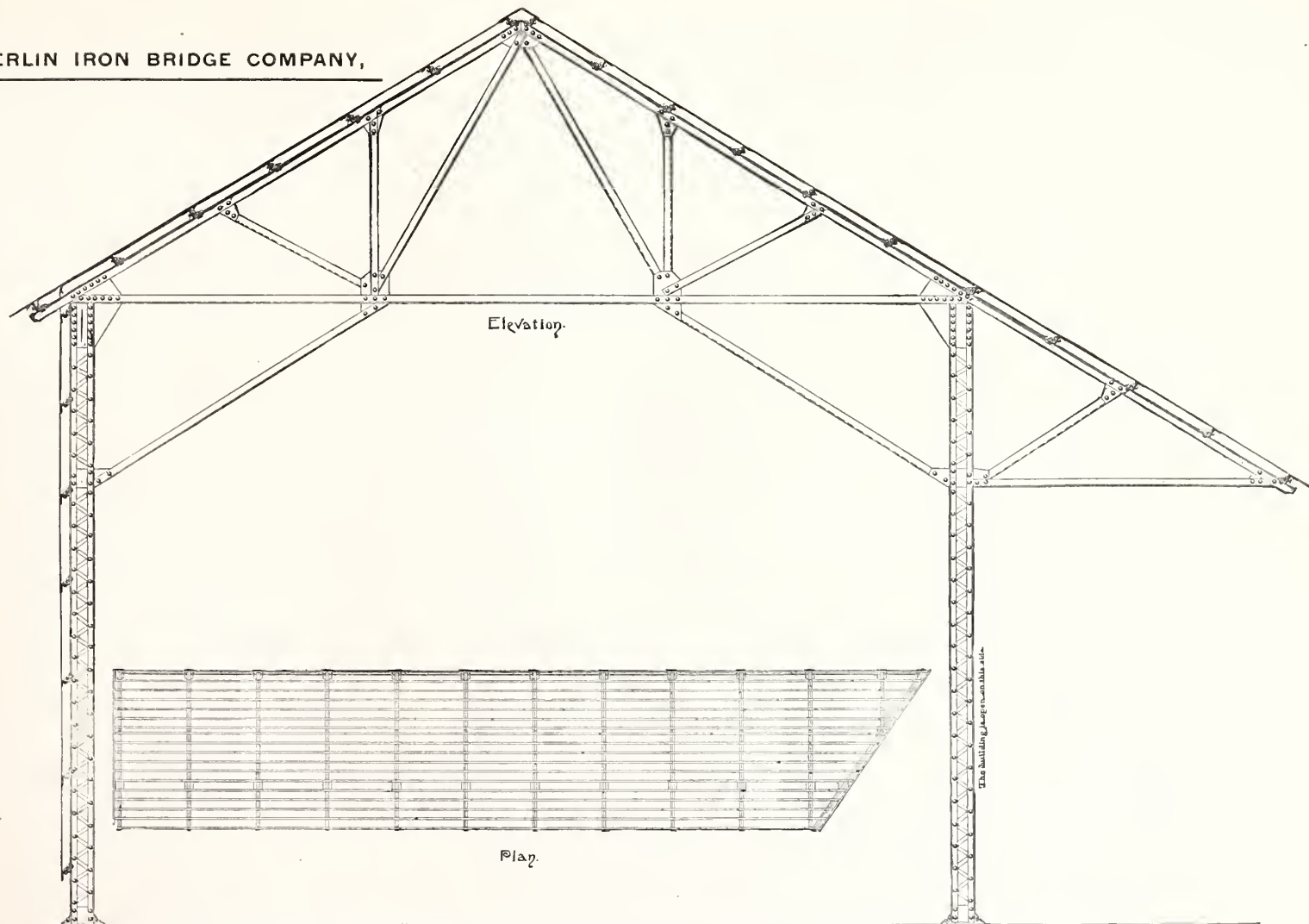


IRON TRUSSES FOR THE ALUMINUM BRASS AND BRONZE COMPANY, BRIDGEPORT, CONN.

IRON BUILDING FOR THE STANLEY RULE AND LEVEL COMPANY, AT NEW BRITAIN, CONN.

THE BUSINESS of the Stanley Rule and Level Company, at New Britain, Conn., necessitates the storing of large quantities of lumber, in order to be thoroughly seasoned before being manufactured, as the superior quality of the goods manufactured by this company necessitate thoroughly well seasoned lumber. It is often necessary to keep this lumber on hand for some time, and the building shown on the opposite page was designed by us for storing lumber in such a way that it would be protected from the weather, and at the same time would allow the air free circulation around the lumber. The building is 20 feet wide from post to post, with an overhang eight feet in front on the open side, the trusses being placed 10 feet apart, and connected with angle iron purlins, covered with corrugated iron. The rear side of the building is covered, except for a distance of 18 inches on the bottom, which is left open to allow the free circulation of the air. The building is open on the front side, so that teams can drive through into the building when necessary, and the overhang in front protects these teams while loading and unloading.

The plan commends itself particularly for storing purposes, where the material stored must be protected from the action of the elements, at the same time well ventilated and free to the action of the air. There is not a particle of wood work about the building in any way, shape, or manner, so that the risk from fire is limited—in fact there is no risk whatever from the building itself, as there is nothing to burn down.



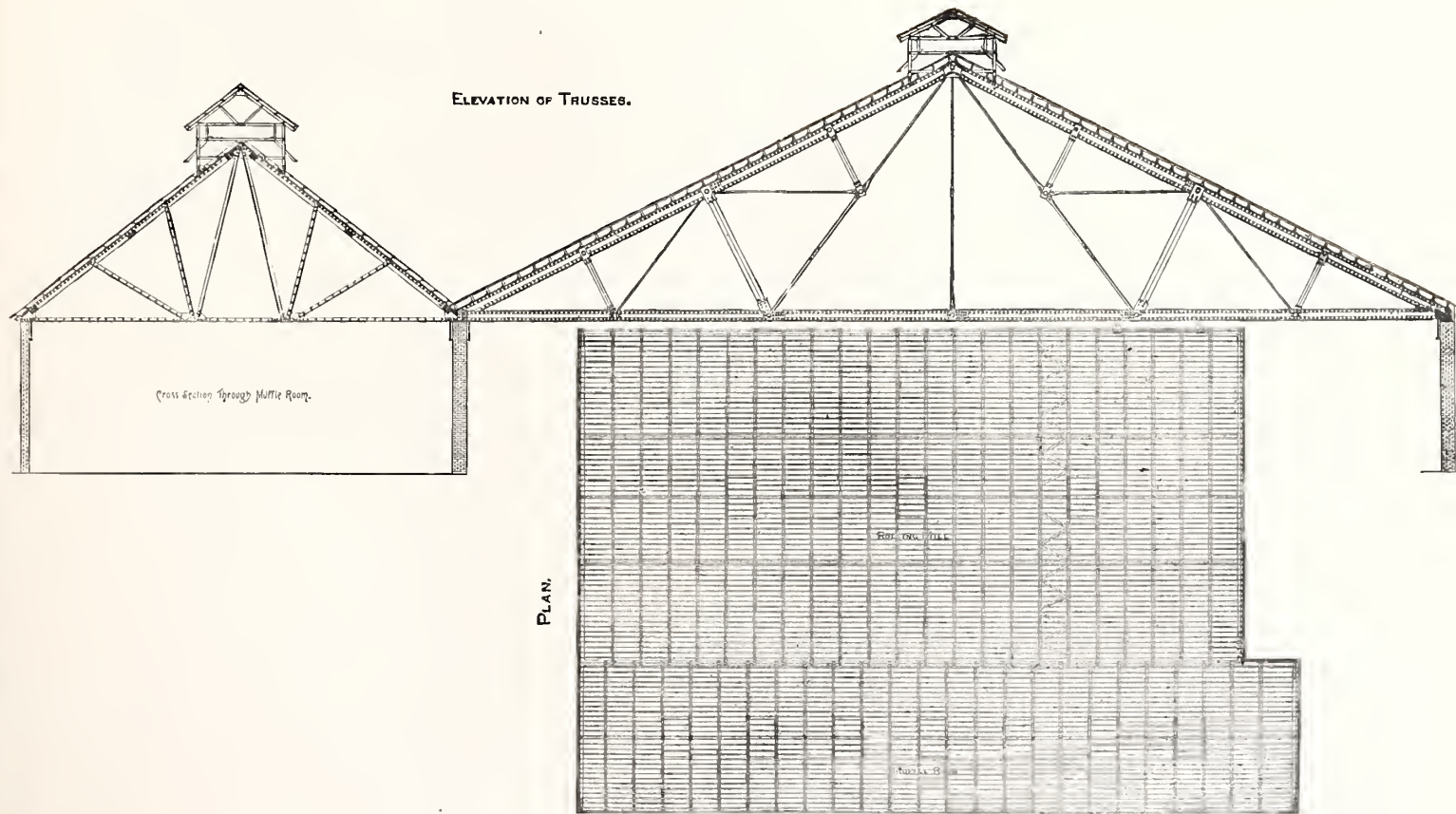
IRON BUILDING FOR THE STANLEY RULE AND LEVEL COMPANY, AT NEW BRITAIN, CONN.

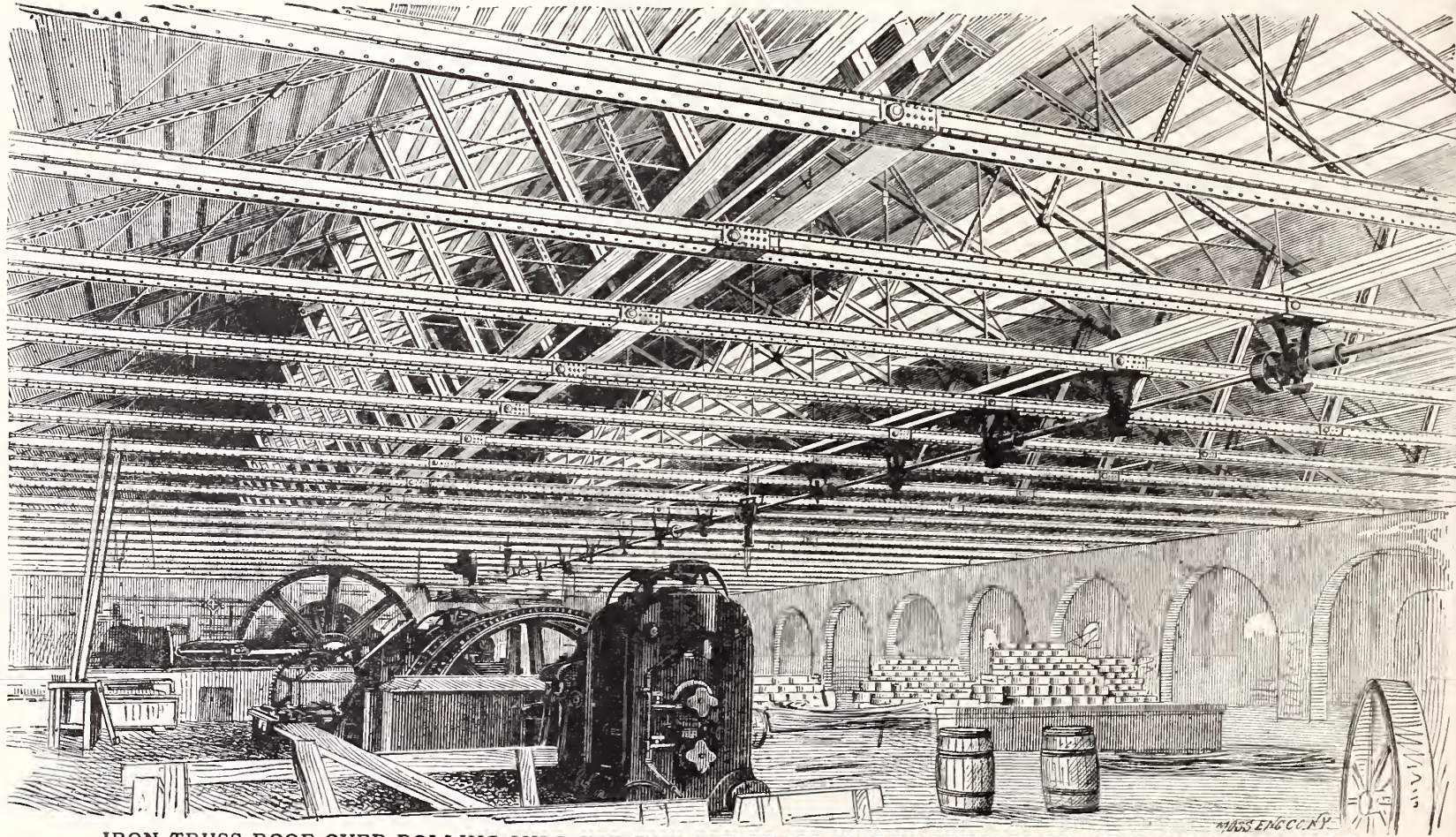
IRON ROOF OF THE COE BRASS MANUFACTURING COMPANY, AT TORRINGTON, CONN.

THE CUT on the opposite page shows a plan and cross section of an iron roof built by us in 1886, for The Coe Brass Manufacturing Company, at Torrington, Conn., and covers probably the finest brass rolling mill in this country. The main rolling mill is 233 feet long and 118 feet wide, and the muffle room is 252 feet long and 51 feet wide, the two connected by a 24-inch brick wall, with arched openings of 30 feet span. The trusses of the rolling mill are designed to carry heavy shafting, and besides, are made sufficiently strong to lift rolls in and out of the housings, avoiding the necessity of using other support than the roof trusses. The purlins on the rolling mill are of wood, and on each side, for nearly the whole length of the mill, there is a skylight, placed in the same plane as the roof covering, which affords sufficient and ample light through the center of the mill. The roof over the muffle room is made entirely of iron—iron trusses, iron purlins, and covered with corrugated iron, so that there is not a particle of wood work about the muffle room to catch fire.

Supported by the wall between the two buildings, there is a large sewer pipe, which takes off the waste water of the valley between the two buildings every ten feet, and being located inside the mill, there is no danger from its stopping up during freezing weather.

On page 70 we show an illustration of the rolling mill roof taken from a photograph.



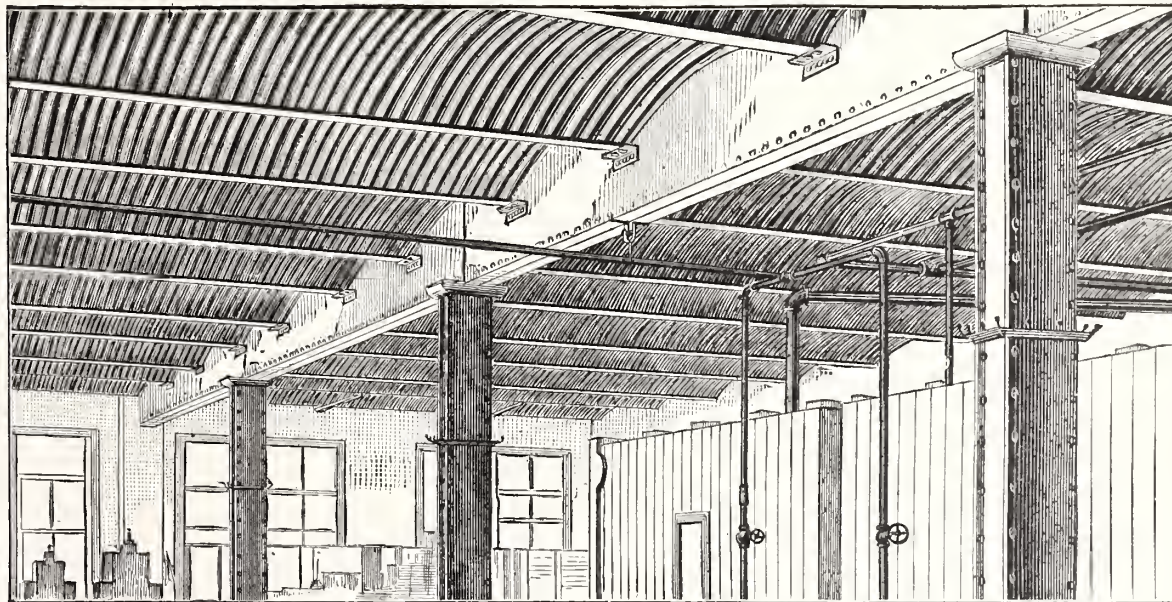


IRON TRUSS ROOF OVER ROLLING MILL FOR THE COE BRASS MANUFACTURING CO., AT TORRINGTON, CONN.

Building, 118 feet wide, 220 feet long.

IRON FLOORS.

WHERE IT becomes necessary to build a fire proof building of more than one story, it becomes necessary to make the floors fire proof as well as other parts of the building. The illustration on this page is taken from a photograph of the inside of an iron fire proof building built by us in 1880, for the Seth Thomas Clock Company, of Thomaston, Conn.

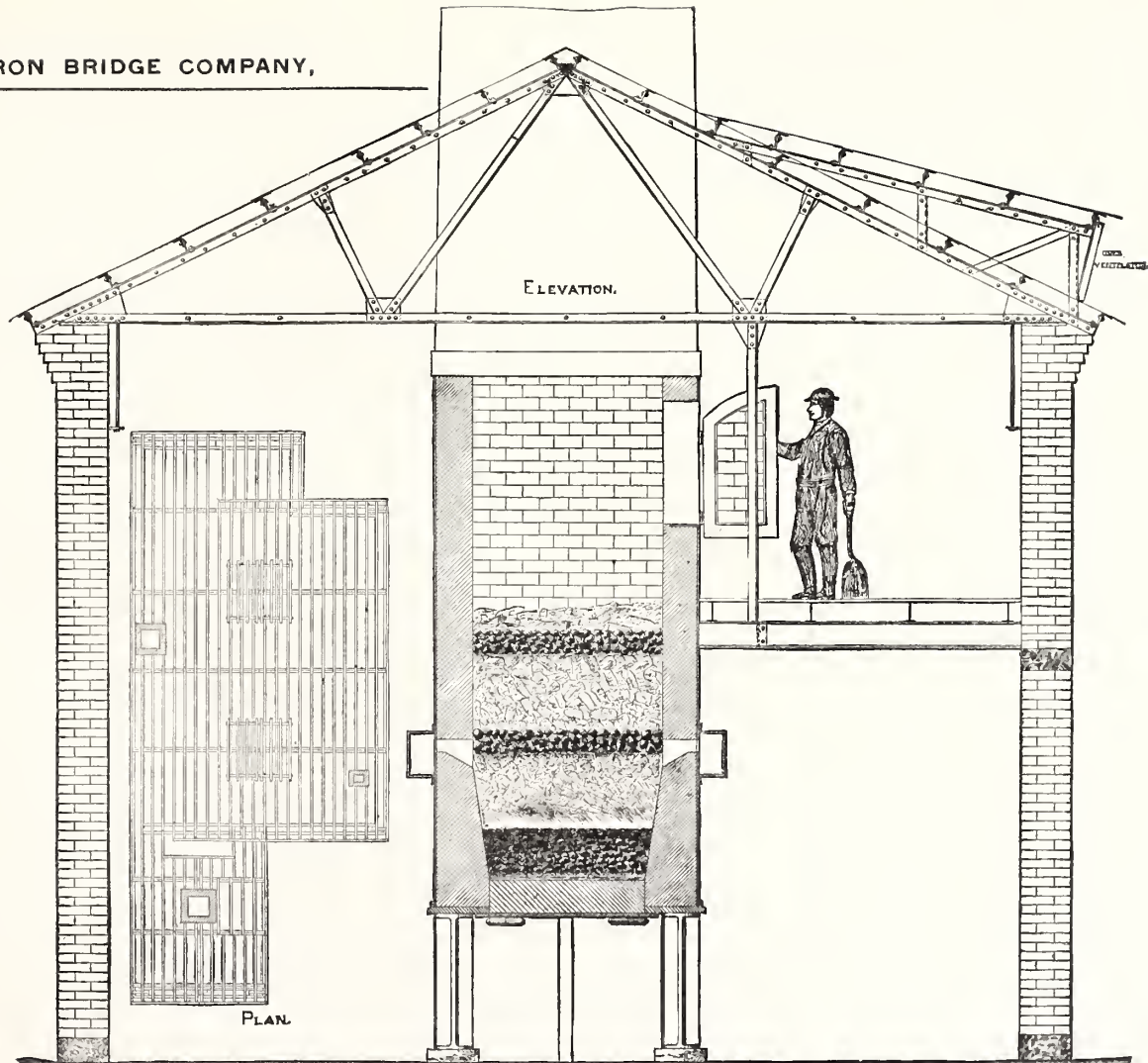


The reputation of the Seth Thomas Clock Company is world wide, and in order to meet the large demands for their goods, it became necessary to build additional works. The management, believing that it would be economical to build a first-class fire proof building, decided on the plan as shown. The building is three stories high, with brick walls, iron floors and iron roof—no wood work being used in any part of the building, except for the wearing surface of the floor and the window casings. Here we have a building which is absolutely fire proof as any building possibly could be, as the inside furnishings might burn out completely without endangering the walls or floors.

Parties contemplating buildings of this kind, will serve their interest by writing us for plans and estimates.

CASTING SHOP ROOF FOR THE NEW HAVEN COPPER COMPANY, AT SEYMOUR, CONN.

THE CUT on the opposite page shows the general construction of an iron roof built by us for the New Haven Copper Company, at Seymour, Conn., from designs of Robert W. Hill, Architect, of Waterbury, Conn., to cover their casting shop. This building is composed entirely of brick and iron, the side and end walls being of brick, and the balance of the construction being entirely of iron, so that there is not a particle of wood work anywhere about the building to catch fire. At the point where the furnace is charged, the platform is supported by the roof trusses, so that workmen can charge the furnace with ease and dispatch. The contour of the ground outside is of such a nature that the raw material is delivered directly from carts to the platform in front of the furnace door. The large amount of gas arising from a furnace of this kind, necessitates thorough ventilation, and the main portion of the casting house has two wrought iron ventilators, with swinging shutters on each side, opening and closing by cords from the floor, and directly over the platform above the charging door of the furnace, there is an open dormer in the roof, which allows free and uninterrupted ventilation. For this class of buildings, the plan as shown commends itself to the consideration of manufacturers.

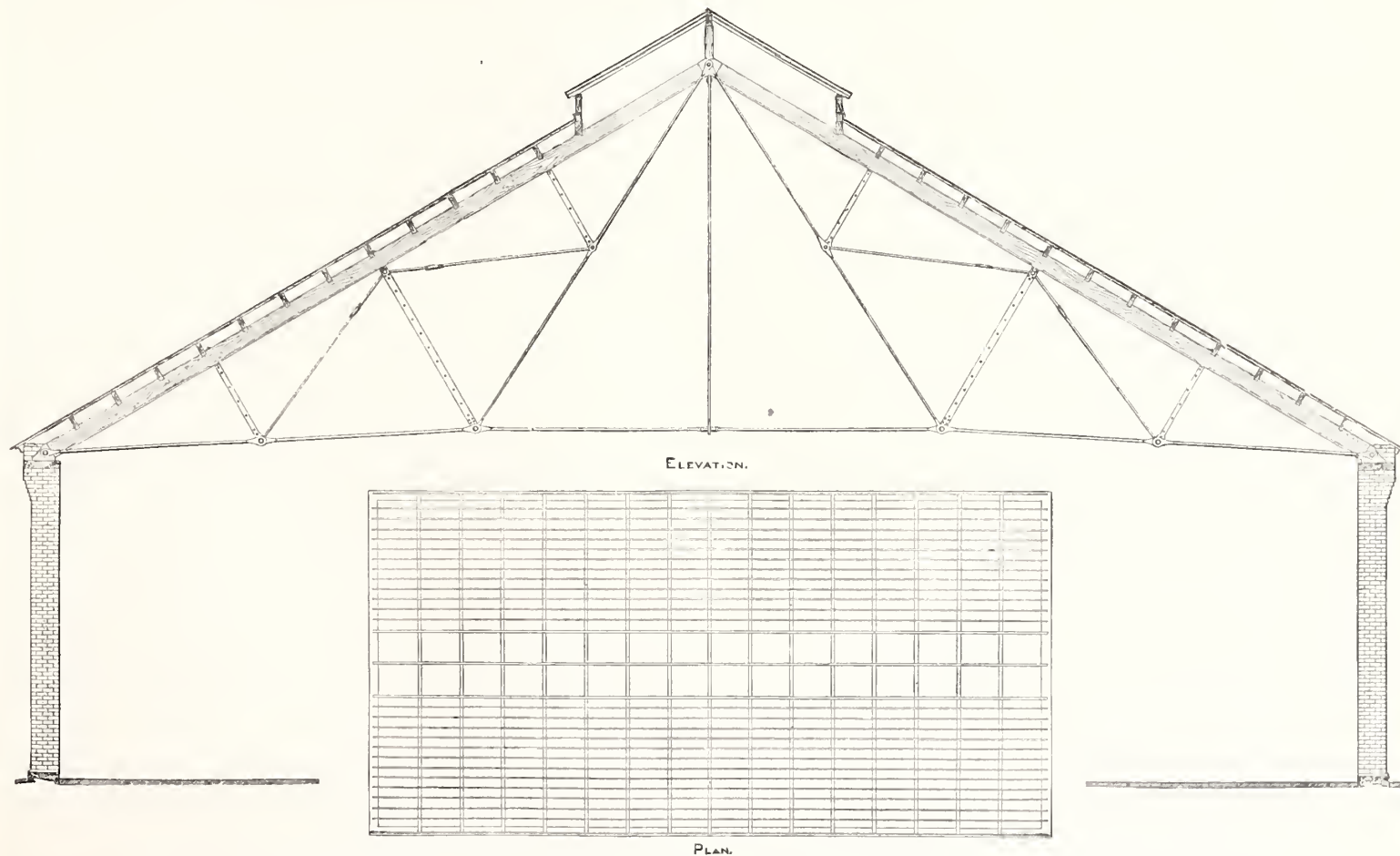


ROOF FOR CASTING SHOP OF THE NEW HAVEN COPPER COMPANY, SEYMOUR, CONN.

IRON FOUNDRY ROOF OF THE RUSSELL & ERWIN MANUFACTURING CO. NEW BRITAIN, CONN.

THE ROOF illustrated on the opposite page was designed by Mr. T. S. Bishop, the Chief Engineer of The Russell & Erwin Manufacturing Company, at New Britain, Conn., to cover their foundry, and is 80 feet wide by 150 feet long. The construction differs somewhat from that shown in the other illustrations, in the fact that the rafter is made of wood, and the balance of the truss is made of iron. The trusses were not designed to support shafting, but simply to carry ordinary snow and wind loads, together with the weight of the roof boards and slate. The trusses are connected together by wooden purlins, covered with two inch planed and matched pine, and covered with slate.

Along the ridge, the whole length of the building, there is a skylight and ventilator, which affords ample light and ventilation. The gable walls are also provided with large windows, covering nearly the entire face of the building, which gives ample light, and, when necessary, can be used for ventilating purposes.



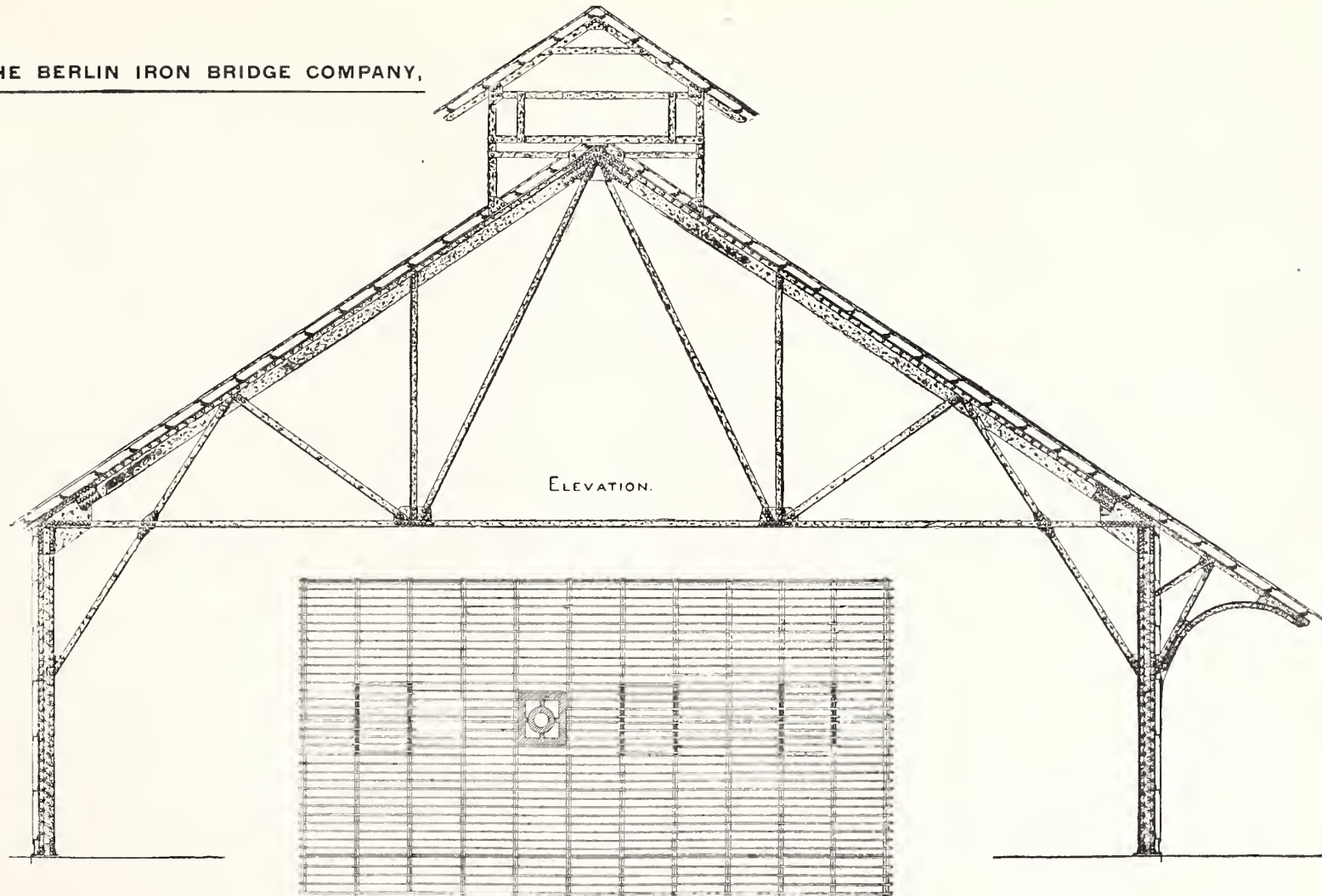
IRON FOUNDRY ROOF OF THE RUSSELL & ERWIN MANUFACTURING CO., NEW BRITAIN, CONN.

IRON CASTING SHOP FOR THE WATERBURY BRASS COMPANY, WATERBURY, CONN.

THE BUILDING shown on the opposite page was built by us in 1886, for the Waterbury Brass Company, at Waterbury, Conn., for use as a casting shop, and is constructed entirely of iron, both the roof and the sides. The building is 110 feet long, and 52 feet wide between the walls, with an outside overhang eight feet wide. The roof is not designed to carry shafting or heavy loads of machinery, but is designed simply as a roof covering for a building liable to fire. The building is provided with wide doors at the sides and ends, so that teams can drive through, in order to deliver the raw material at the furnaces, and carry out the finished product. The overhang extends the whole length of the building on the side next to the railroad track, thus providing additional room for storing both raw material and finished product, at the same time protecting it from the weather, and placing it where it will be easily and quickly accessible.

This is probably one of the most complete, well ordered and well constructed brass casting shops to be found anywhere in this country, being designed with especial reference for this kind of work by men of large experience.

THE BERLIN IRON BRIDGE COMPANY,

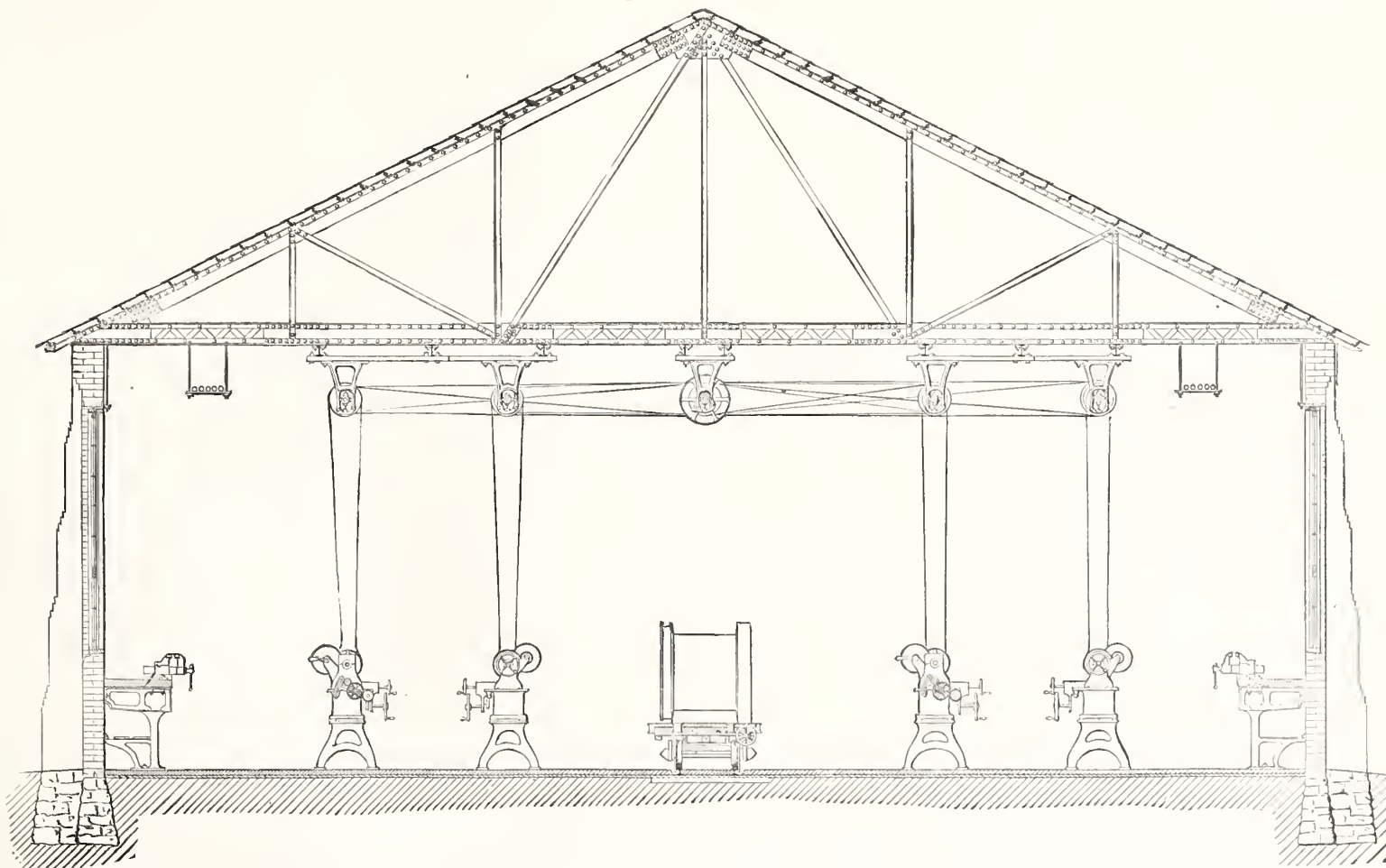


IRON CASTING SHOP FOR THE WATERBURY BRASS COMPANY, WATERBURY, CONN.

MACHINE SHOP FOR THE C. W. HUNT COMPANY, AT WEST NEW BRIGHTON, STATEN ISLAND, N. Y.

THE CUT on the opposite page shows an iron roof built by us for the C. W. Hunt Company, at West New Brighton, Staten Island, N. Y., to cover the new machine shop lately built by them. The building is 42 feet wide by 202 feet long, trusses placed ten feet apart, and connected together by wrought iron purlins, and covered with slate. The trusses are designed to carry shafting near the sides, and through the entire length of the building at the center is placed a track, which carries a trolley car for moving material lengthways of the building. Underneath the trusses are placed rolled beams, as shown, securely fastened to the trusses, and the shafting is connected to these direct. The side walls are of brick, and there is not a particle of wood work used anywhere about the building, it being designed as an absolute fire proof manufacturing building.

Notice that the lower chord of the trusses is stiffened to carry extra loads of shafting, etc. In the present case, the shafting is secured as noted, to I beams, running lengthways of the building, but these trusses are made so that the boxes that carry the shafting can be placed on top of the lower tie beams in the usual way, if desired.

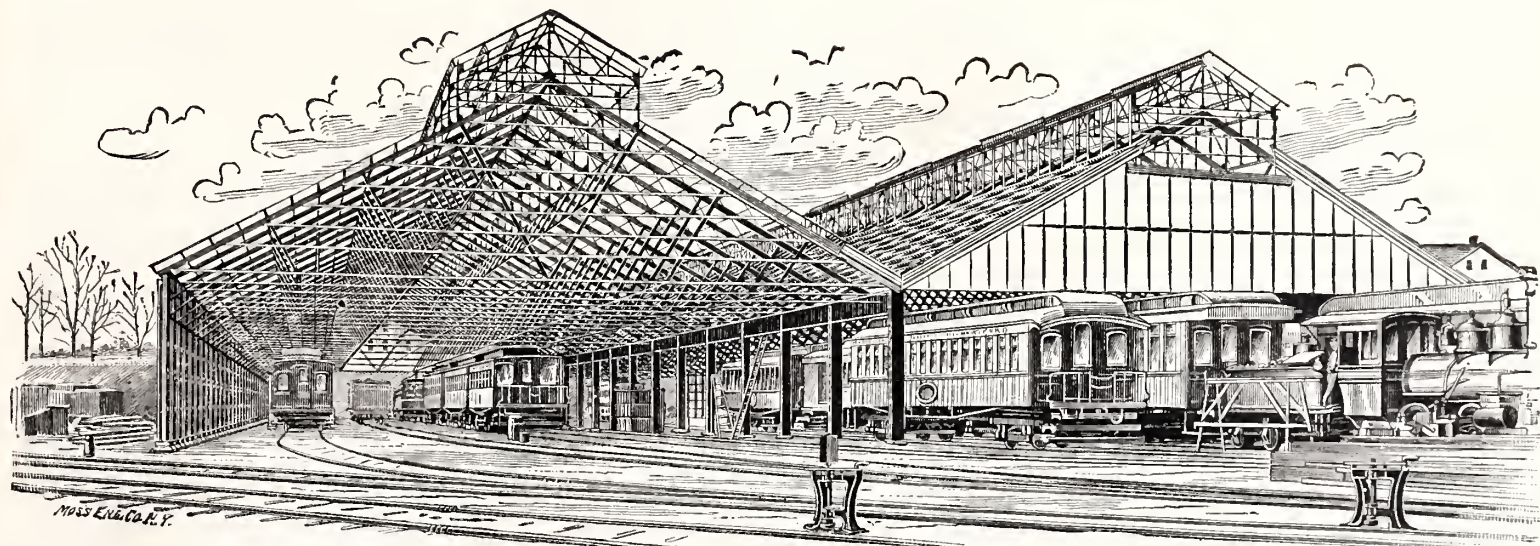


IRON ROOF FOR MACHINE SHOP OF THE C. W. HUNT COMPANY, AT WEST NEW BRIGHTON, STATEN ISLAND, N. Y.

IRON TRAIN SHEDS FOR THE NEW YORK, NEW HAVEN & HARTFORD R. R. CO. NEW HAVEN, CONN.

THE CUT on the opposite page is made from photographs taken during the construction of an iron train shed, built by us in 1885, for the New York, New Haven & Hartford Railroad Company, New Haven Conn., from the design of F. S. Curtis, Chief Engineer. The building is 120 feet wide by 400 feet long, open at both ends, but covered on the roof and sides. The building is made in two spans, 65 feet each, the trusses being supported on one end by girders and columns as shown. Extending the whole length of the building is a skylight and ventilator, projecting six feet above the roof, as shown. The roof of this ventilator is of glass, so as to light the center of the building, and the sides are made of iron louvers, left open for ventilation, but so constructed that neither rain nor snow can beat in.

The building is designed for storing cars when not in use, and is built entirely of iron and glass, not a particle of wood work being used in any part.



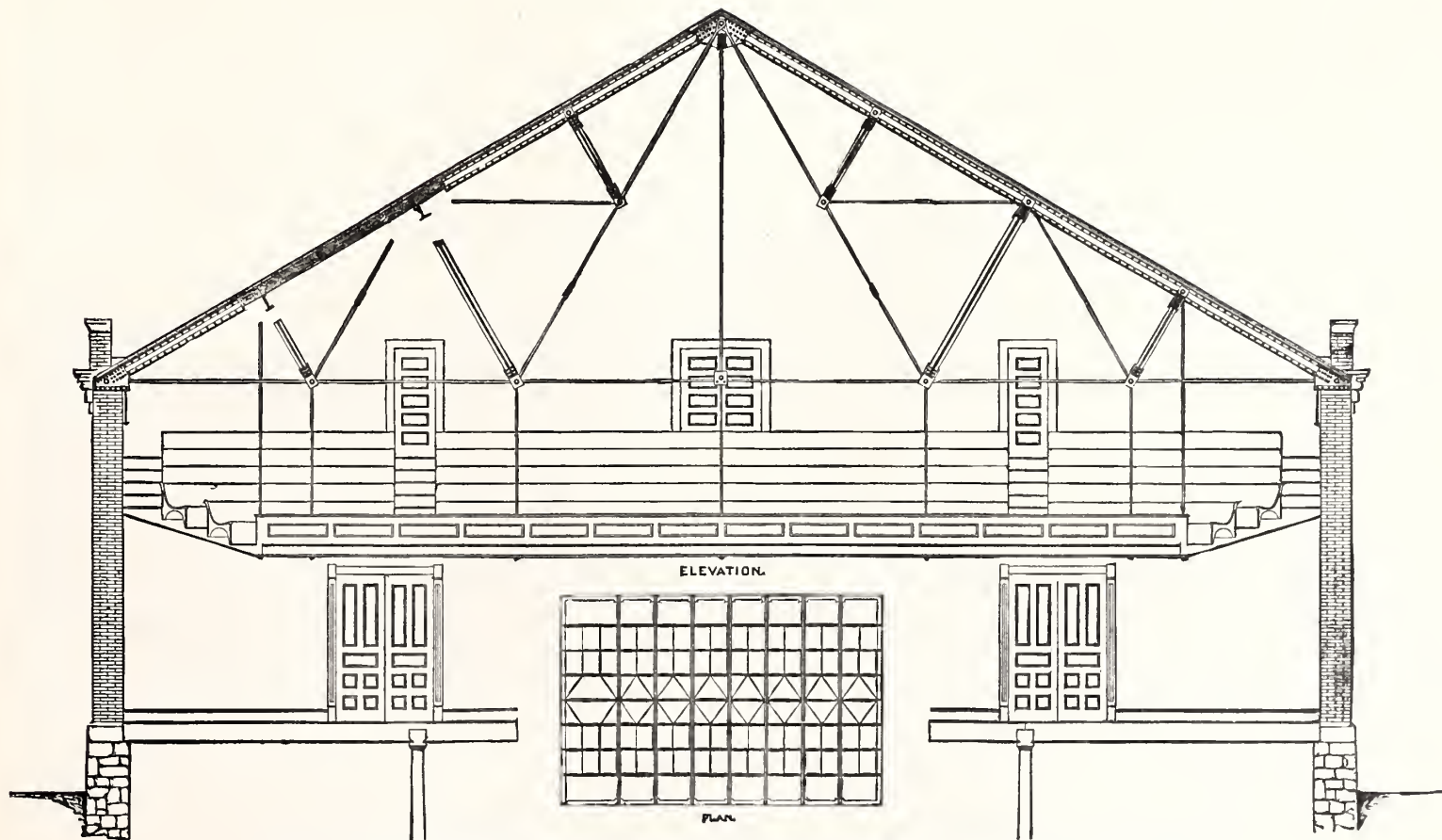
IRON TRAIN SHEDS FOR THE NEW YORK, NEW HAVEN & HARTFORD RAILROAD CO., NEW HAVEN, CONN.

Building 120 feet wide, 400 feet long.

IRON ROOF TRUSSES OF THE FOOT GUARDS ARMORY, AT HARTFORD, CONN.

THE BUILDING of which a cross section is shown on the opposite page was designed by John C. Mead, Architect, Hartford, Conn., as an Armory for the Foot Guards of Hartford, Conn. The building is 77 ft. span, and the drill room is 114 feet long, making an open space of sufficient size for the evolutions of a large body of troops.

The construction is somewhat peculiar and differs slightly from that shown in the other illustrations from the fact that the trusses are placed 14 feet apart, and at each panel point connecting the trusses is placed a wrought-iron purlin which supports wooden rafters placed crossways of the building which wooden rafters carry the roof boards placed lengthwise of the building, as shown. Extending entirely around the hall, except at one end, is a gallery supported by the iron roof trusses, as shown on the plan, leaving the floor entirely free, at the same time allowing seating capacity for a large number of spectators. When it is desirable to place the trusses more than 10 feet apart this form of construction particularly commends itself, as the trusses can, if necessary, be placed even 30 feet apart, by increasing the size of the purlins which connect the trusses at the panel point. The roof also illustrates a very neat way of supporting side galleries without obstructing the floor of the room by posts.



IRON ROOF TRUSSES OF THE FOOT GUARDS ARMORY, AT HARTFORD, CONN.

IRON ARCADE OR PLATFORM COVERING.

THE LARGE demand for an iron covering for depot platforms, etc., which will be plain and at the same time ornamental and substantial, caused the construction of the Arcade, shown on the opposite page, which was designed to meet this want by Chas. P. Clark, President of the N. Y., N. H. & H. R. R. Co. During the last two years we have built a matter of one half mile of this Arcade for the N. Y., N. H. & H. R. R. Co., to cover the platform at their different stations. The roof is so arranged that the portion on the outside away from the tracks overhangs sufficiently to be a protection to vehicles in stormy weather, and on the inside next to the tracks, the roof is brought down as low as possible, and clear the tops of the cars—thus making a convenient shelter for waiting teams and for passengers. The posts are placed 25 feet apart lengthwise of the Arcade and 10 feet apart crossways, the overhang on the outside is 11 feet and on the inside six feet. The Arcade presents a very ornamental appearance and is at the same time strong and substantial, and constitutes a permanent improvement.



IRON ARCADE OR PLATFORM COVERING.

IRON BUILDINGS AND ROOFS BUILT BY US.

THE FOLLOWING is a list of some of the many iron buildings and iron roofs built by us in the last few years. Parties wishing to inquire or examine the character of our work are thus given an opportunity to know where it can be found. We invite examination and correspondence with the parties named below as to the character of our work.

N. Y., N. H. & H. R. R. Co	NEW HAVEN, CONN.
AMOSKEAG MFG. CO	MANCHESTER, N. H.
CHEENEY BROS	MANCHESTER, CONN.
RUSSELL & ERWIN MFG. CO.	NEW BRITAIN, CONN.
NEW HAVEN WIRE CO.	NEW HAVEN, CONN.
CHESHIRE WATCH CO.	CHESHIRE, CONN.
L. B. SMITH RUBBER CO	SETAUKET, L. I.
BRIDGEPORT ARMORY	BRIDGEPORT, CONN.
WINCHESTER REPEATING ARMS CO	NEW HAVEN, CONN.
MILLERTON IRON CO	IRONDALE, N. Y.
D. & H. SCOVILL	HIGGANUM, CONN.
PALMER BROS	MONTVILLE, CONN.
COE BRASS CO	TORRINGTON, CONN.
BRIDGEPORT COPPER CO.	BRIDGEPORT, CONN.
SHELBY IRON WORKS.	SHELBY, ALA.
ANSONIA BRASS AND COPPER CO	ANSONIA, CONN.
SEYMOUR MFG. CO	SEYMOUR, CONN.
CITY WATER WORKS	BURLINGTON, VT.

IRON BUILDINGS AND ROOFS BUILT BY US.

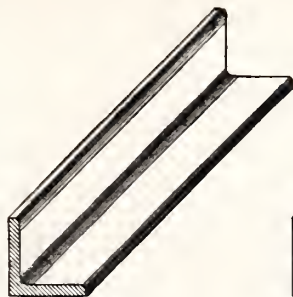
THE FOLLOWING is a list of some of the many iron buildings and iron roofs built by us in the last few years. Parties wishing to inquire or examine the character of our work are thus given an opportunity to know where it can be found. We invite examination and correspondence with the parties named below as to the character of our work.

WATERBURY BRASS CO.	WATERBURY, CONN.
BILLINGS & SPENCER CO.	HARTFORD, CONN.
STANLEY RULE AND LEVEL CO.	NEW BRITAIN, CONN.
NEW HAVEN COPPER CO.	SEYMOUR, CONN.
RUSSIA CEMENT CO.	GLOUCESTER, MASS.
LAKE GEORGE PULP AND PAPER CO.	TICONDEROGA, N. Y.
EASTERN FORGE CO.	PORTLAND, ME.
SEYMOUR MFG. CO.	SEYMOUR, CONN.
ANACONDA SMELTING WORKS.	ANACONDA, MONTANA.
MANCHESTER PRINT WORKS	MANCHESTER, N. H.
FOOT GUARD ARMORY.	HARTFORD, CONN.
SEDGEWICK HALL	LENOX, MASS.
JOHN ILLINGWORTH STEEL CO.	HARRISON, N. J.
NARRAGANSETT ELECTRIC LIGHTING CO	PROVIDENCE, R. I.
DULUTH IRON AND STEEL CO.	DULUTH, MINN.
CONNECTICUT ELECTRIC CO.	WATERBURY, CONN.
C. W. HUNT CO.	NEW YORK, N. Y.
ALUMINUM BRASS AND BRONZE CO.	BRIDGEPORT, CONN.

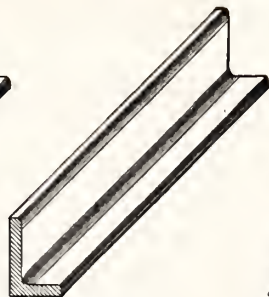
ANGLES, TEE BARS, CHANNELS, BEAMS, AND GIRDERS.

THE ILLUSTRATIONS on the opposite page show several different forms of made and rolled sections for use in buildings. The upper row on the page gives a section of the ordinary rolled forms which are used in construction. To carry heavy walls, the plate and box girders shown in the lower row are especially designed where the span and the loads are too great for rolled beams, the ordinary plate girder, as shown, is particularly well adapted, but in case the walls are over 12 inches wide, the box girder is better designed for the work as it gives greater width. Where the wall is more than 20 inches wide and the loads are very excessive, it is often necessary to use a triple box girder, the construction of which is also shown. The ordinary box girders can be made of any depth or any width up to 24 inches, but above that we recommend a triple box girder, which can be made any depth or any width up to 60 inches.

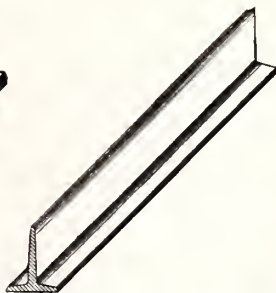
We carry in stock ordinary even legged angle iron from 1 inch x 1 inch x 3-16 inch to 6 inch x 6 inch x $\frac{3}{4}$ inch, or unevenlegged angle of the ordinary sizes. We always have in stock a large assortment of plates, angles, T bars, beams, channels, and girders, so that we are able to furnish any of these at short notice.



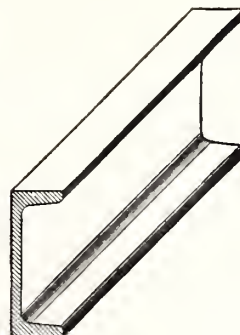
EVEN LEGGED ANGLE



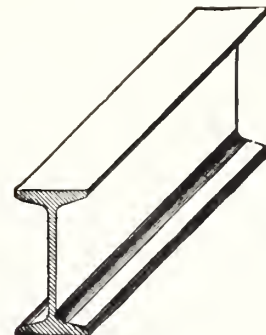
UNEVEN LEGGED ANGLE



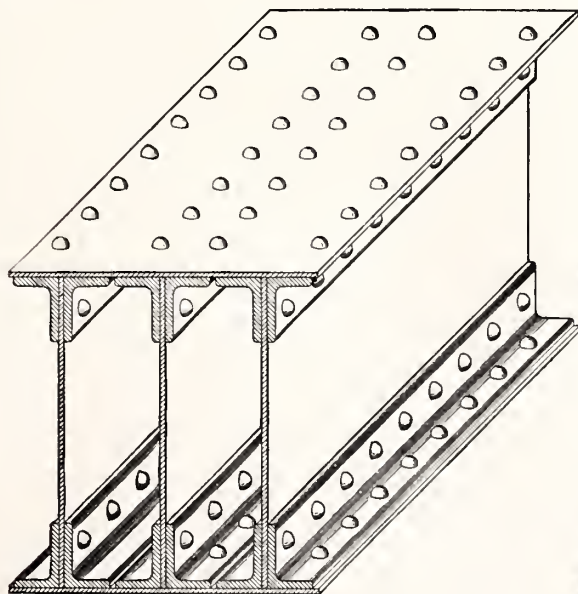
T-BAR



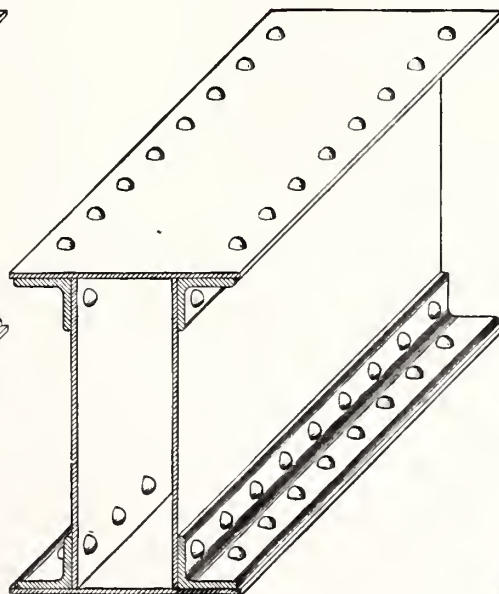
CHANNEL BAR



I-BEAM



TRIPLE BOX GIRDER



BOX GIRDER

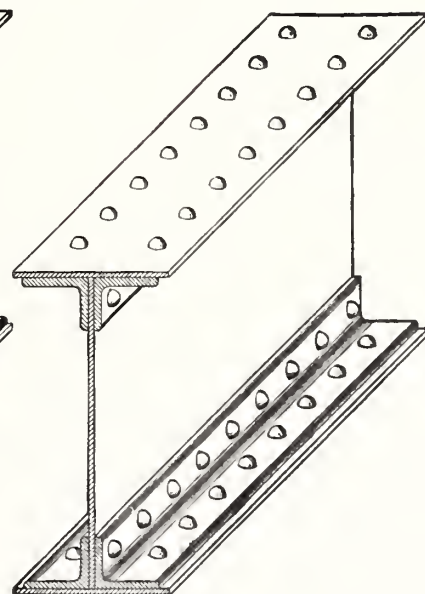


PLATE GIRDER

ANGLES, TEE BARS, CHANNELS, BEAMS, AND GIRDERS,

CORRUGATED IRON DOORS AND SHUTTERS.

THE USE of iron doors and shutters to protect openings in brick walls from fire is very old. A great many people, however, loose sight of the fact that iron will not resist fire unless put in proper shape. A window shutter made of one large sheet of heavy plate iron is of little or no use as a fire protection, for the reason that as soon as exposed to any heat which would ignite wood work, the shutter will warp and twist so badly as to allow fire to enter between the wall and the shutter. For this reason, plate iron doors and shutters have been almost universally abandoned, and in their stead are used corrugated iron. We have no hesitation in saying that we make the best corrugated iron fire proof door and shutter to be found anywhere in this country, as our experience extends over a long series of years, and our experiments have been very expensive and very valuable as determining the best form and construction to resist fire.

We make several different styles of corrugated iron doors and shutters, depending upon the exposure. For slight exposures, where the buildings are well separated, and the danger from excessive heat is very slight, we recommend our single thickness doors and shutters, shown and described on pages 96 and 97, as offering sufficient protection. Where, however, the buildings are close together, and the danger from fire communicating between the buildings is great, we recommend our two thickness corrugated iron doors and shutters, shown and described on pages 94 and 95, as these will offer ample protection for all outside exposures. For inside exposures, as for use in vault doors and fire proof walls, we recommend our filled box doors, shown and described on pages 92 and 93, as being the very best thing ever built in this line.

Some four years ago we made a test of our corrugated iron shutters, an account of which we clipped from the *New Britain Herald* at the time.

"In one corner of the yard was located a building about ten feet square, with a 3 x 6-inch opening in each side, and into these were fitted the four different styles of fire proof shutters manufactured by the Company, viz.: Single and double thick box doors, and a wood shutter door covered with tin. The inside of the building was completely filled to the top of the wall—about ten feet high—with hard wood thoroughly saturated with kerosene oil, and covered over the top with corrugated iron, to confine the heat. The shutters

CORRUGATED IRON DOORS AND SHUTTERS—Continued.

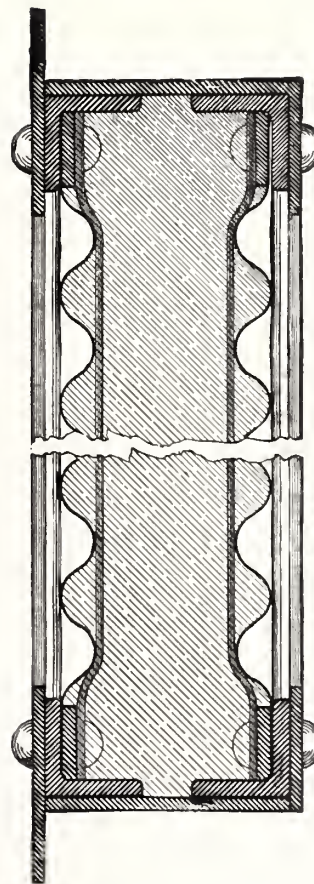
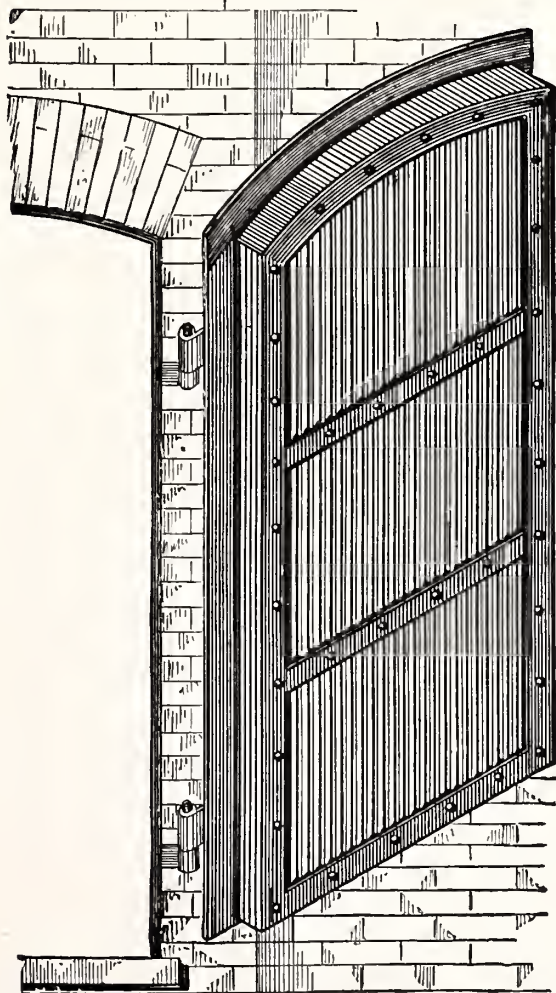
were all placed in exactly the same exposure, and the fires were lighted. It soon began to burn fiercely, but for the first half hour it did not show itself on any of the shutters, but so great was the heat the walls commenced cracking. The first signs of giving way under this severe heat was shown in about half an hour, by the wood shutter covered with tin, which commenced to emit smoke and wood oil through the holes in the tin where the latches and stays were bolted on. The corrugated iron shutters at this time showed no effect of the heat, except the single thick shutter, which became quite warm so that the paint commenced to smoke. The box door was so cool that a person could hold their hand on it. At the end of an hour, the wood shutter covered with tin, which had been for some time throwing off streams of smoke through the cracks, showed unmistakable signs of giving out, and had it not been for the heavy iron bands forming the outer frame, it would have fallen from its place. The single thickness corrugated iron shutter was, at the same time, so hot that the paint was all burned off, and the others began to show the intense heat by the burning paint on the outside, but still held their places, and beyond the burning paint showed no signs of distress. It now became evident that the wood shutter covered with tin could not withstand this severe heat much longer, and soon the flames were seen to eat through it at the top, showing that the inside cover of tin had been burned off, and the shutter, as a fire protection, was useless. The corrugated shutters held their places firmly and closely to the wall. At the end of three hours the fire had nearly subsided, and the shutters were all opened out for examination. On the inside of the wood shutter, covered with tin, a large hole had been burned through the inside covering, and when the shutter was opened, about one-half of the inside wood work dropped out, a mass of burned and charred wood. The shutter had been evidently held together by the wrought iron band about the outside, and the strap pieces forming the hinges which were all firmly bolted through and through with large washers inside—a form of construction which the superintendent informed us they alone use on shutters of this kind, and without which the shutters, no doubt, would have failed completely to do the duty. As it was, it came out of the fire in a very damaged and useless condition, while the corrugated iron shutters were, apparently, AS GOOD AS NEW, except the single thickness shutter, which was warped a very little on one lower corner, but not enough to allow the fire to leak through.

The test was witnessed by several, but it is to be much regretted that it had not been more generally advertised, so that more of our large manufacturing companies, to whom fire proof construction is such an important item, could have been represented. The test was very satisfactory indeed, as showing merits of the corrugated iron shutters over the wood covered with tin, although for moderate exposure these latter stood a good test. The building with the shutters still attached is to be left standing, just as they now are, and parties interested in fire proof shutters can see them if they wish."

CORRUGATED IRON BOX DOORS.

THESE ARE constructed of two layers of heavy corrugated iron, each layer built in a heavy angle iron frame, and the two connected together by heavy bands and angles, with an air space of two inches or more between the layers, the whole strengthened by projecting flanges and cross bands, and held firmly in position by heavy hinges and double latch bars. For extraordinary exposures, as for fire walls in wooden buildings and for vault doors, we fill the space between the two layers with non-conducting material, making a fire proof door which will resist any heat short of the melting point.

We have no hesitation in saying that these doors will stand any heat which a brick wall will stand, without warping, twisting, or allowing the fire to pass through.

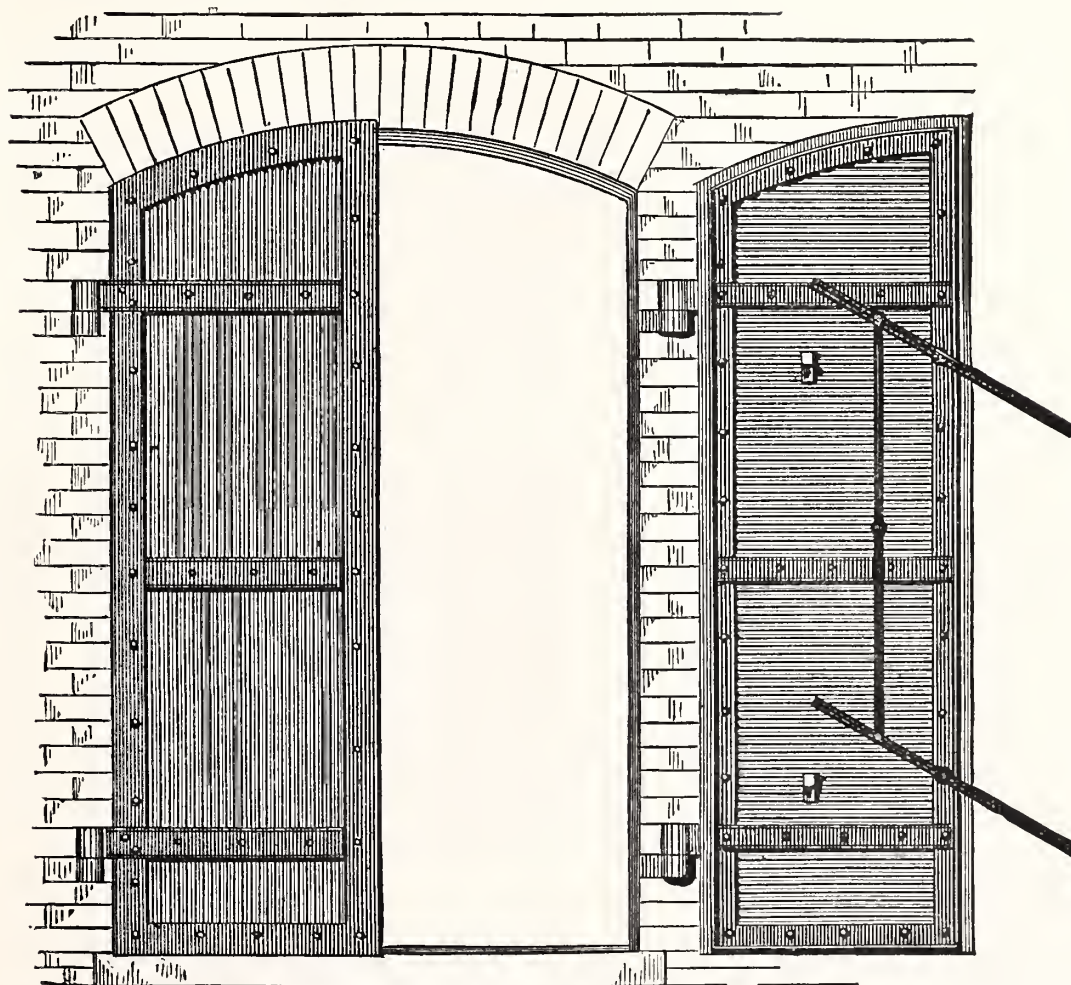


CROSS SECTION, SHOWING THE CONSTRUCTION
OF OUR REGULAR FILLED BOX DOORS.

TWO-THICKNESS DOORS AND SHUTTERS.

THESE ARE composed of two plates of corrugated iron, the corrugations running at right angles to each other, built into a heavy angle iron frame, thoroughly supported by flanges, bands, hinges, and latch bars, making an air space of less depth than in the box doors, but amply sufficient for ordinary exposures, and forming an entirely reliable protection, except for extra hazardous positions.

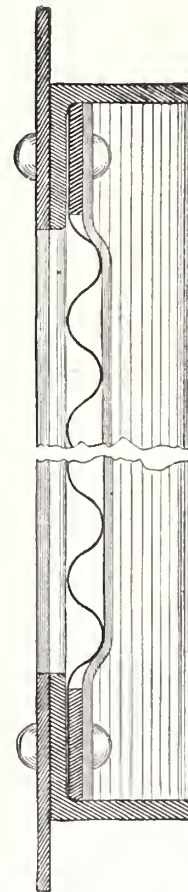
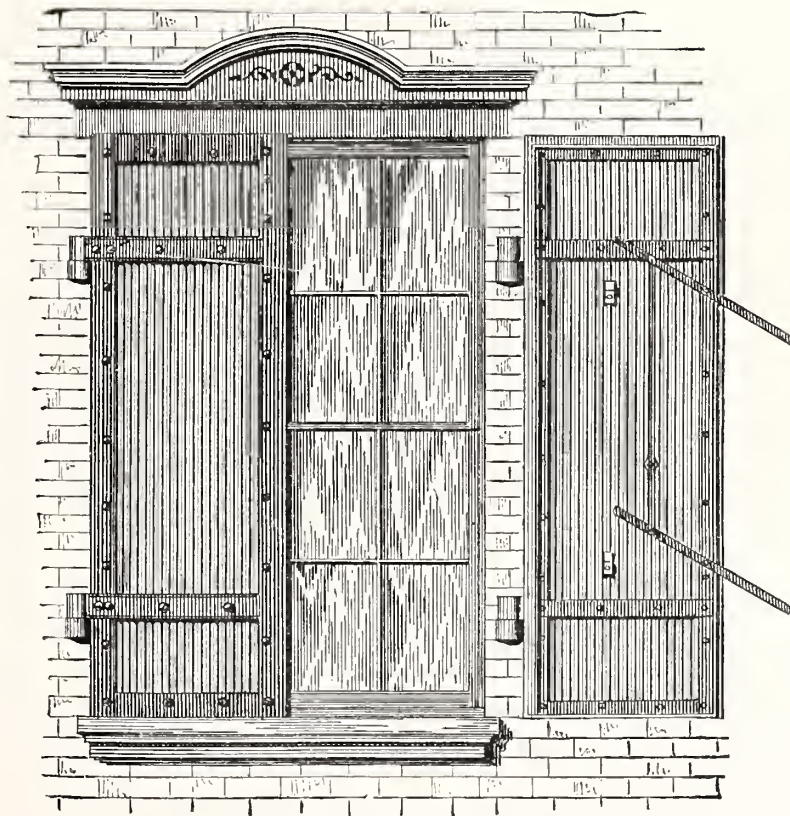
This plan is also admirably adapted for outside shutters, where the windows are very large, or are subjected to an unusual exposure.



Cross Section Showing the Construction of Our
Regular Two Thickness Corrugated
Iron Shutters.

SINGLE THICKNESS SHUTTERS AND DOORS IN ANGLE IRON FRAMES.

THESE ARE our regular, best quality shutters and doors for all ordinary outside exposures. There are many thousands of them in use, and they have never failed to prove an entire protection, though often subjected to the severest tests. They are constructed of heavy plates of corrugated iron, with heavy angle iron frames, and thoroughly supported by heavy bands, flanges, hinges, and double latch bars.



Cross Section Showing the Construction of Our
Regular Single Thickness Corrugated
Iron Shutters.

These Illustrations were taken direct from Photographs.

The town of Litchfield, Conn., at an expense of several thousand dollars, lately completed a new town and county court house, which is shown in the cut below. The building was constructed entirely of wood, except in the center there was a brick vault for storing town records. The openings to this vault were protected by **corrugated iron fire proof doors**, furnished by The Berlin Iron Bridge Company.



BEFORE THE FIRE.

The view on the right shows the ruins after the fire. The letter which we received a few days after the fire from the architect, Robt. W. Hill, Esq., of Waterbury, Conn., explains how the doors protected the vault.



AFTER THE FIRE.

The Berlin Iron Bridge Co., East Berlin, Conn. :

WATERBURY, CONN., August 17, 1888.

DEAR SIRs:—I have just returned from Litchfield, Conn., where I examined the ruins of the new court house. The court house has been entirely consumed by fire, and nothing is left standing but two chimneys and the two brick vaults, which were built to preserve the town and county records.

The doors on the vaults, which were furnished by your company, protected them perfectly. The vaults being new, no records had yet been placed in them, but the inside wood-work and some yellow pine shavings lying on the floor were unscorched. The outside doors are of course more or less warped and burned, but the inside vestibule doors are unharmed, the paint not being blistered; in fact they are in as good condition as when they were put in, and will be used again, and with some repairs, the outside doors can be used again.

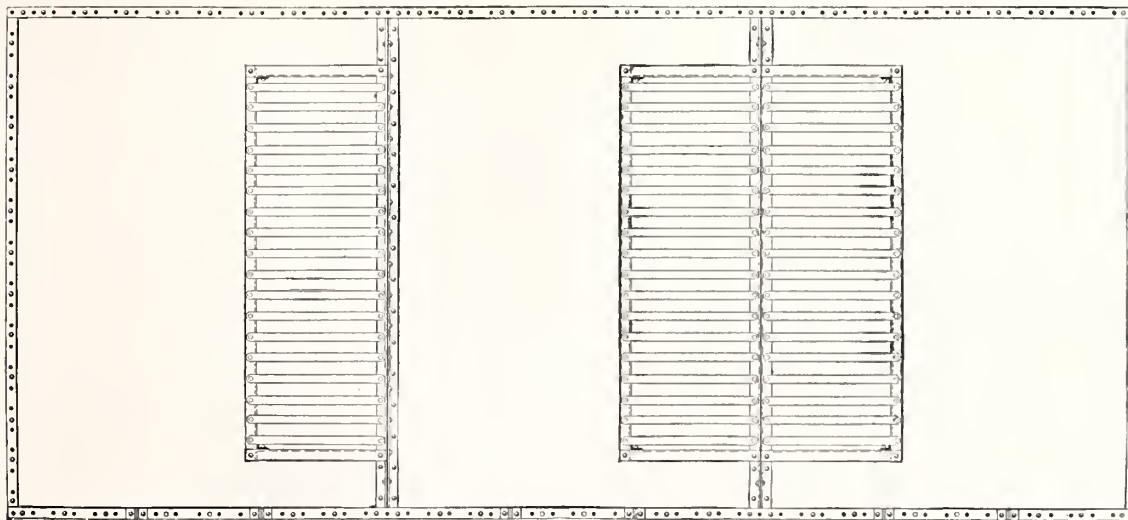
I have never seen a corrugated iron box door of any kind exposed to so severe a heat as this, and shall have no hesitation hereafter in recommending your corrugated iron doors for fire proof vaults. I consider this a very severe test, as the building was entirely of wood, and very heavily timbered.

Yours very truly,

ROBERT W. HILL, Architect.



ELEVATION.



PLAN.

JAIL CELL.

The cut on this page represents an ordinary form of Jail Cell or Lock-up, of which we are building a great many. The illustration shows three cells, which can be placed in any ordinary room or hall, as they are complete in themselves, the sides, floor and top being of iron, thus saving the expense of building a large amount of mason work. These cells are very valuable in small towns as furnishing a perfectly safe and reliable means of confinement for temporary criminals, tramps, etc. They are not designed to hold prisoners under long sentence, as such prisoners are generally consigned to the keeping of the county officials. These cells made of iron or steel are much cheaper than those made of stone or brick.

Cells constructed in this way are much easier to clean and keep clean than if made of wood, brick, or stone. Each cell is provided with an iron bedstead securely riveted to the iron cell, thus preventing prisoners doing themselves bodily harm or using portions of the bedstead for breaking out.

IRON POLICE STATION AT WATERBURY, CONN.

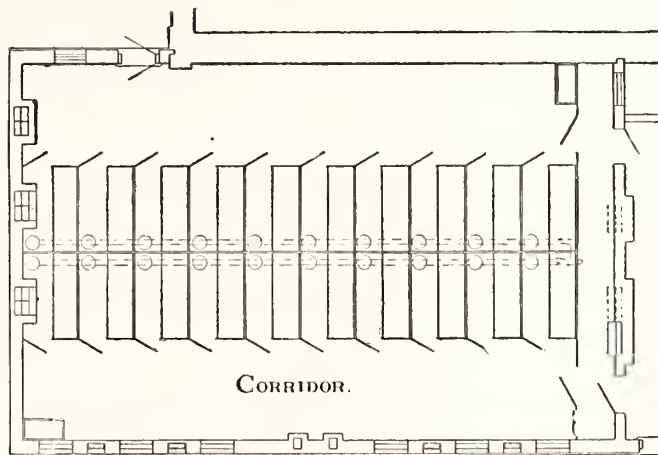
THE CUT on the opposite page shows the iron work for a Police Station built by us for the City of Waterbury, Conn.

The side walls are of brick and stone. In the centre of the building, with a corridor on each side, there are placed two rows of jail cells, ten cells in each row—thus offering accommodations for twenty prisoners without using the corridor. Each cell is made with a back and sides of solid plate iron, thus preventing any communication whatever between the occupants of the different cells. For the purpose of light and ventilation the tops of the cells are made of iron lattice, and, in order to prevent violent and insane prisoners from making any fastenings to the roofs of cells for the purpose of hanging themselves, a layer of fine wire netting is placed between the lattice bars, so that it is absolutely impossible to make any attachment whatever to the top of the cells.

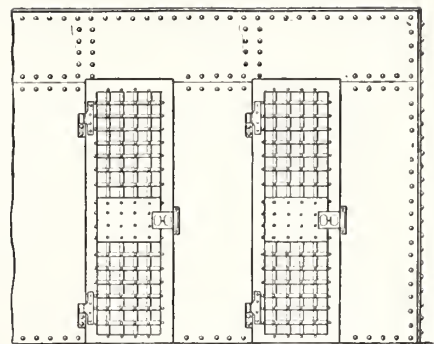
The front is made of solid plate, except the grated door, which is provided with a slide through which food can be passed without unlocking the door. In each cell is an iron cot bed thoroughly riveted to the sides and floor, making it perfectly immovable.

This is probably one of the best designed police stations in the United States for a city of the size of Waterbury, as it combines a good, comfortable place for the detention of prisoners, at the same time, a safe and reliable place of confinement.

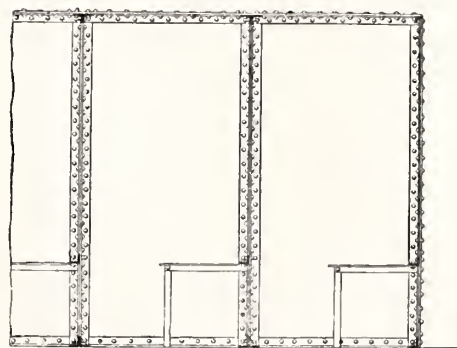
We should be pleased to furnish plans and estimates to parties desiring work in this line, either in iron or steel.



GENERAL PLAN
OF
JAIL

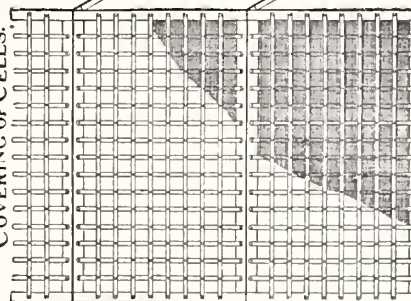


PART ELEVATION
SHOWING
FRONT OF CELLS.

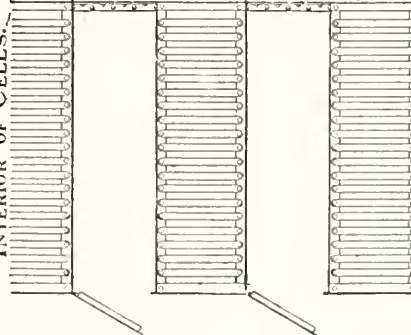


PART CROSS SECTION
THROUGH
CELLS.

TOP PLAN
SHOWING
COVERING OF CELLS.



BOTTOM PLAN
SHOWING
INTERIOR OF CELLS.



IRON POLICE STATION AT WATERBURY, CONN.

TESTIMONIALS.

The Berlin Iron Bridge Co.:

NICHOLS, N. Y.

Gentlemen—Yours of Jan. 28th is at hand, and in reply would say that the bridge built by your Company for our town has given entire satisfaction, combining durability, simplicity, and strength. Would recommend your work as first-class in every respect to those needing anything in your line of work.

Yours truly, LEWIS JONES, Com'r Highways.

The Berlin Iron Bridge Co.:

DALTON, MASS.

Gentlemen—The three iron bridges erected by your Company for this town are perfectly satisfactory to the Board of selectmen and the traveling public. We have three other bridges in town, but we consider your bridges are far superior to those. I can recommend them to any town needing iron bridges.

Very respectfully, JOHN SMITH, Chairman Selectmen.

Since above was written, we have built another bridge in this town for a new board of town officers.

Berlin Iron Bridge Co.:

GOSHEN, IND.

Gentlemen—Your bridge here is entirely satisfactory, and we find it to be all you claimed.

A. MYERS, Sup't of Bridges.

The Berlin Iron Bridge Co.:

BENNINGTON, N. H.

Gentlemen—The bridge built by the Berlin Iron Bridge Company for this town is a first-class structure, and has proved satisfactory in every respect, and I cheerfully recommend it to any town wanting a good bridge.

B. F. GEORGE, Civil Engineer and Selectman.

The Berlin Iron Bridge Co.:

LACONIA, N. H.

Gentlemen—The bridge you built for us four years ago is entirely satisfactory, and I most cheerfully recommend your Company to parties in want of bridge work.

Respectfully yours, F. W. LADD, Selectman.

OFFICE OF THE LANGDON MFG. CO., MANCHESTER, N. H.

The Berlin Iron Bridge Co.:

Gentlemen—The iron bridge you made us last summer was first-class in every respect, and is giving us entire satisfaction. Yours truly, WM. KILLEY, Agent.

The Berlin Iron Bridge Co.:

LISBON, N. H.

Gentlemen—In reply to yours of the 25th inst., would say that the bridge your Company built for our town in the autumn of 1884 gave entire satisfaction at the time and has been growing in favor ever since. It is now the pride of every citizen in our town, and it is now the verdict of those that opposed the bridge, that the town did the right thing at the right time. After nine consecutive years of experience in looking after the bridges of this town, I am confident that no town can afford to replace their old worn-out bridges with wood, and that no town could do any better than to build the Parabolic Truss Bridge, in preference to any other iron bridge. I can cheerfully recommend the Company for square dealing to all in need of their work.

Yours respectfully, HENRY C. SYMONDS, Ch. of Selectmen.

The Berlin Iron Bridge Co.:

MIDDLEFIELD, CONN.

Gentlemen—It gives me great pleasure to be able to say that the bridge constructed by your Company for us two years ago has given entire satisfaction; and I may also say that the bridge erected by your Company at Rock Falls is to-day as staunch and firm as when it was first erected.

JAMES T. INGLIS, Chairman Selectmen.

The Berlin Iron Bridge Co., East Berlin, Conn.:

MANCHESTER, VT.

Gentlemen—The bridge built for this town some four years ago by your Company has as yet shown no signs of "structural weakness." If we send it out to sea in search of a storm, and the inoffensive experts appointed to accompany it report that it fails to come up to the contract, will inform you.

Yours very respectfully, M. CANFIELD, Chairman Selectmen.

Gentlemen of the Iron Bridge Co.:

SHARON, CONN.

The bridge you erected across the stream at Sharon Valley in 1884 gives entire satisfaction. The public commend it for its symmetrical proportions, as well as for its strength and durability. The bridge is situated near a blast furnace, and is crossed daily, except Sundays, with teams heavily loaded with iron and coal. I consider the wear and tear on this bridge greater than on any other of its size in town, and it stands its test well. To towns desirous of erecting iron bridges I can cheerfully recommend your Bridge Company for good work and fair dealing.

Yours respectfully, BALDWIN REED, First Selectman.

The Berlin Iron Bridge Co.:

DOVER, ME.

Dear Sirs—In answer to your letter of inquiry of Jan. 21st, would say that the iron bridge built by your Company for our town in the fall of 1884 has given entire satisfaction. The citizens are well pleased with it, and should we want another bridge, we would, in my opinion, vote unanimously for another iron one, in preference to the old wooden ones, and would advise all parties in want of a good substantial bridge to buy your iron bridge every time. Yours truly, I. O. BURGESS, Ch. Selectmen.

The Iron Bridge Co.:

DERBY, CONN.

Gentlemen—The iron bridges built for the town of Derby, as we have stated before, give the best of satisfaction; they are strong, durable, and built to stay. You may refer to our board at any time.

Yours truly, ROBERT O. GATES, Chairman Selectmen.

Since above was written we have built another bridge in this town for a new board of town officers.

The Berlin Iron Bridge Co.:

WASHINGTON MILLS CO., LAWRENCE, MASS.

Gentlemen—The bridge you built for us last summer is entirely satisfactory in every way. Yours respectfully, WASHINGTON MILLS CO.

The Berlin Iron Bridge Co.

THOMASTON, ME.

Gentlemen—The iron bridge 60 ft. span and 18 ft. roadway which your company built between this town and the city of Rockland in 1885 gives entire satisfaction. The bridge has been in use two years and subject to heavy loads and continuous traffic which has fully tested it, and now we have no hesitation in saying the bridge is entirely satisfactory in every way, shape, and manner, and we cheerfully recommend your company to all in want of first-class iron bridges. The Parabolic Bridge built by your company has great stiffness as well as beauty of outline. We are thoroughly satisfied with the bridge and your manner of dealing.

Yours very truly, WM. A. HATCH, Chairman Selectmen.

Since above was written we have built another bridge in this town for a new board of town officers.

The Berlin Iron Bridge Co.:

HOLLIS CENTER, ME.

Gentlemen—The iron bridge built by your company between this town and Buxton has given entire satisfaction. I consider it first-class in every particular, and I can cheerfully recommend your company to any town in want of first-class iron bridges.

W. S. MOULTON, Chairman Selectmen.

The Berlin Iron Bridge Co.:

CORINTH, VT.

Gentlemen—I can with pleasure say that the bridge that you built for us last summer gives perfect satisfaction, and we can cheerfully recommend your work to those in need of first-class bridges.

Yours truly,
G. M. WINCHESTER, Chairman Selectmen.

The Berlin Iron Bridge Co.:

HOPKINTON, N. Y.

Gentlemen—The Parabolic Low Truss Bridge built at Ft. Jackson in the town of Hopkinton in 1885 by your company gives entire satisfaction to the tax-payers and the traveling public. We have no hesitation in recommending your company to any town or committee wishing to purchase bridges. Respectfully yours,

J. A. HARRON, Commissioner of Highways.

The Berlin Iron Bridge Co.:

WESTPORT, MASS.

Gentlemen—Your favor of the 8th received. In regard to the iron bridge constructed by you for the town of Westport last summer we have to say that the bridge as erected is very satisfactory to the great majority of our town people, and we believe so far as can be seen the bridge is all that you claimed for it, viz.: a bridge of great strength and utility. We have no doubt that that class of bridge will become general as old bridges become dilapidated and untrustworthy and need replacing.

Yours truly,
A. D. MANCHESTER, }
H. W. KIRBY, } Selectmen.

Berlin Iron Bridge Co.: OFFICE OF MERRICK THREAD CO., HOLYOKE, MASS.

Gentlemen—The iron elevated bridge, 81 feet span, you erected for us across Main street in this city, gives us thus far entire satisfaction. We consider it strong against any lateral pressure less than a tornado. Yours truly,

TIMOTHY MERRICK, Treas.

The Berlin Iron Bridge Co.,

BURNHAM, ME.

Gentlemen—Yours of the 21st came duly to hand, inquiring about the bridge you built for us three years ago. In reply would say that the bridge has given entire satisfaction, and if we had another one to build we should let the job to your company.

Yours truly, G. E. BERRY, Chairman Selectmen.

The Berlin Iron Bridge Co.:

CUMMINGTON, MASS.

Gentlemen—The bridge purchased of you for the town of Cummington has given entire satisfaction to all. I can cheerfully recommend your bridge to all in need of highway bridges. Respectfully yours, L. A. TOWER, Ch. Selectmen.

The Berlin Iron Bridge Co.:

ASHLAND, N. H.

Gentlemen—The iron bridge you built for this town is giving perfect satisfaction, and I can recommend your bridges as first-class in every respect.

ERI G. CLAPP, Chairman Selectmen.

The Berlin Iron Bridge Co.:

WESTFIELD, MASS.

Gentlemen—Your letter of the 8th inst. was duly received. Permit me to say that the bridge you built for this town last summer is entirely satisfactory in every respect. It is as firm as the earth and handsome withal. Yours very truly,

EDWIN HEDGES, Selectmen.

We have built two iron bridges for this town since above was written.

The Berlin Iron Bridge Co.:

CAMDEN, ME.

Gentlemen—The bridge which you contracted for the town of Camden across Goose River in the year 1884 gives our town perfect satisfaction in every way. It is some 150 ft. long 40 ft. above the river, rattles none, and is an ornament to our village. We cheerfully recommend your bridge to any towns which are contemplating building bridges across streams or deep chasms.

Very respectfully,

ALDEN MILLER, Jr.,
J. S. FULLER,
D. J. ANDREWS, } Selectmen.

Berlin Iron Bridge Co.:

HORNELSVILLE, N. Y.

Dear Sirs—I have put in during the present year, three of your iron bridges from 54 to 63 ft. All of these bridges are being subjected to severe tests, and all, so far, prove satisfactory. I regard them as excellent bridges in every respect.

Yours truly, JAMES GRAY, Commissioner of Highways.

The Berlin Iron Bridge Co.:

NORTH MANLIUS, N. Y.

Gentlemen—Your bridge is a good one and gives good satisfaction.

C. J. K. OATS.

The Berlin Iron Bridge Co.:

GRANTVILLE, CONN.

Gentlemen—Your line at hand. In reply would say that I think the bridge you put on for us has given good satisfaction. My one regret is that we have not more like it. Yours truly, M. F. GRANT, First Selectman.

The Berlin Iron Bridge Co.:

WADLEYS FALLS, N. H.

Gentlemen—Yours of the 25th has been received. In reply I may say, the bridges built us by the Berlin Iron Bridge Co. give us perfect satisfaction. I stood on the first bridge built when a team of six oxen and four horses with an engine of ten tons crossed it and I could notice hardly a vibration. We have no hesitation in saying they are good. ISAIAH D. EDGERLY, Selectman.

The Berlin Iron Bridge Co.:

SWANTON, VT.

Gentlemen—In answer to your inquiry in relation to the iron bridge you built for this town I would say that it has given entire satisfaction. We can cordially recommend your bridges to any in need of a bridge. Very truly yours,

CHARLES H. REYNOLDS, Chairman Selectmen.

The Berlin Iron Bridge Co.:

HONEOYE FALLS, N. Y.

Gentlemen—Your letter of January 29th to hand and contents noted. The iron bridge you built for our town last year gives entire satisfaction. We have several iron bridges in our town, but none to compare with yours in strength and durability. We would recommend it to any parties wanting a good, durable bridge.

Yours respectfully, N. P. EARLE, Commissioner of Highways.

OFFICE OF AMOSKEAG PAPER MILL, MANCHESTER N. H.

The Berlin Iron Bridge Co.:

Dear Sirs—The iron bridge which you built and placed over the canal in this city for us last summer we are much pleased with. To those desiring such structures, we unhesitatingly recommend your house. Very truly, JOHN HOYT & Co.

The Berlin Iron Bridge Co.:

MAYOR'S OFFICE, BROCKTON, MASS.

Gentlemen—This is to certify that the Berlin Iron Bridge Co. has furnished the city of Brockton with five iron bridges, two of which are what are known as the concrete iron bridge. I am pleased to say that our dealings have been perfectly satisfactory and that everything has been done in a thorough and workmanlike manner, and the material furnished has been first-class.

Very respectfully, JOHN J. WHIPPLE, Mayor.

The Berlin Iron Bridge Co.:

CHESTERFIELD, MASS.

Gentlemen—In relation to the bridge you recently put up in this town, we take pleasure in stating that it is constructed according to contract, and that it has been satisfactorily tested by heavy loading, fast driving, and extreme cold weather, and everything is entirely satisfactory, and even exceeds our expectations.

Very respectfully,

W. I. RICE,
D. I. STANTON, } Selectmen of Chesterfield:

The Berlin Iron Bridge Co.:

WHITEFIELD, N. H.

Gentlemen—We have had one of your iron bridges in use since 1883, and it has given entire satisfaction and we can recommend it to any town in want of a first-class bridge. Yours truly, A. W. MINER, Chairman Selectmen.

The Berlin Iron Bridge Co.:

CHESTER, VT.

Gentlemen—The iron bridge you built for the town of Chester last August is a first-class iron bridge, and so far has given entire satisfaction to the tax-payers and the community at large. Material and workmanship appear to be good, the bridge firm and rigid. We would recommend any town to examine your bridge before purchasing elsewhere. Yours truly, CALVIN S. HINDS, Chairman Selectmen.

The Berlin Iron Bridge Co.:

SALAMANCA, N. Y.

Gentlemen—This town has now five spans of Parabolic Truss Iron Bridges put up by the Berlin Iron Bridge Co.—three span of 133¼ feet 20 ft. roadway with two five-foot walks, put up in 1883, one span 85 feet in 1884, and one span 150 feet 20 ft. roadway, in 1886, put up in place of a two span of — iron bridge removed. All of these bridges give perfect satisfaction to the town and are admired by every one. Yours truly, J. E. CHAMPLIN, Commissioner of Highways.

The Berlin Iron Bridge Co.:

CONWAY, MASS.

Gentlemen—I can cheerfully say, we are well pleased with the bridge you built for us last summer, and also the 200 ft. span you built four years ago, between this town and the town of Shelburne. Both are giving the best of satisfaction. If more iron bridges were to be built this would be the one preferred.

Yours very truly, FRANKLIN PEASE, Chairman Selectmen.

The Berlin Iron Bridge Co.:

CANANDAIGUA, N. Y.

Gentlemen—We, the Commissioners of Highways of the town of Canandaigua, do heartily endorse the Parabolic Truss Bridge manufactured by you. We have one low truss and four high truss bridges that have been tried for the last five years, and they meet the approbation of the public. We, as a board of commissioners, cannot speak too highly of the material and workmanship in your bridges. May the good work go on. Yours truly,

DEWITT HAIRE,
HOMER A. DAVIS, } Commissioners of Highways.
G. M. DUEL,

The Berlin Iron Bridge Co.:

WESTERLY, R. I.

Gentlemen—We have now used the Concrete bridge which you built between the towns of Westerly, R. I., and Stonington, Conn., and we are fully satisfied that there is no better bridge in the New England States. Yours truly,

B. COURT BENTLEY, Chairman Town Council.

The Berlin Iron Bridge Co.:

SACO, ME.

Gentlemen—In answer to your inquiry of January 22d, would say it gives me great pleasure to say that the bridge built by your company in the city of Saco, some four years ago, has given entire satisfaction, and that the larger one of over 300 feet in length, constructed by you the past summer for the cities of Saco and Biddeford combined, is, in my judgment, superior to the other in consequence of several improvements in construction which you have adopted.

Yours very truly, ROSCOE L. BOWERS, Mayor.

Since above was written, we have built another bridge in this city for a new board of city officers.

Berlin Iron Bridge Co.:

PIKE, N. Y.

Dear Sir—I am in receipt of your favor of December 8th. In reply thereto I would say we have several iron bridges in this town, two of which were made by the Berlin Iron Bridge Co. I consider the bridge you built for me last fall to be the best one in western New York, without exception; it is so conceded by all who have seen it. It is a model of strength, workmanship, and beauty.

Yours truly, J. A. PHILLIPS, Commissioner of Highways.

The Berlin Iron Bridge Co.:

CHATEAUGAY, N. Y.

Gentlemen—This is to certify that the town of Chateaugay, N. Y., during the summer of 1886, purchased of the Berlin Iron Bridge Co. two Parabolic Truss Bridges, which are giving the best of satisfaction. It is believed that these bridges are the best in the market. Yours truly,

N. G. DOUGLAS, Town Clerk.
R. W. ANDERSON, Supervisor.
H. W. DERBY,
J. M. WARREN, } Justices.
H. A. STOUGHTON,
H. H. HILL,
JOHN DASKIN, Commissioner of Highway.

The Berlin Iron Bridge Co.:

JEWETT CITY, CONN.

Gentlemen—In reply to yours of the 11th, I have to say, the two bridges made by you, of iron, are in place: one 62 feet and the other 102 feet long. I am very much pleased with them, and am satisfied that they are constructed on the right principle and are destined to be the bridge of the future.

J. O. SWEET, Agent Ashland Cotton Co.

Berlin Iron Bridge Co.:

EVANS MILLS, N. Y.

Dear Sir—The two iron bridges built this fall by the Berlin Iron Bridge Co., give entire satisfaction to all that have seen them, and I think they are the best bridges now in use. B. M. STRONG, Commissioner of Highways.

The Berlin Iron Bridge Co.

THOMPSON, CONN.

Dear Sir—We received your letter dated August 11th, and in reply will say, we are well pleased with the bridge, and if we ever have to buy another bridge, we shall buy the same kind of a bridge; and everything was as Mr. Towne agreed to have it. This is the way we feel. Yours, etc.,

GEORGE H. NICHOLS, First Selectman.

Since above was written, we have built another bridge in this town for a new board of town officers.

Berlin Iron Bridge Co.

MAINE, BROOME CO., N. Y.

Gentlemen—We have in this town five iron bridges built by four different companies, one—the last one erected—by the Berlin Iron Bridge Co. When it became my duty to buy an iron bridge I carefully examined the bridges in this and other towns, among them the one built by your company, and decided on one of your Parabolic Truss Bridges, and now that it is completed, I am satisfied that I made no mistake in my selection. All who have seen the bridge pronounce it ahead in all points, of any bridge we have, and it gives me pleasure to say that all your agreements and the contract have been fully kept, and I can heartily recommend your company and bridges to all. Yours very respectfully,

T. T. LAWTON, Commissioner of Highway.

We have built two iron bridges for this town since above was written.

The Berlin Iron Bridge Co.

JEWETT CITY MILLS, JEWETT CITY, CONN.

Gentlemen—The bridge you have recently built for us in Jewett City gives entire satisfaction, and has stood, without any apparent settling, the severe tests of heavy teaming during the repairs which are going on here.

Yours respectfully,

W. A. SLATER.

The Berlin Iron Bridge Co.

BRAINTREE, MASS.

Gentlemen—The three iron highway bridges erected by the Berlin Iron Bridge Co., for the town of Braintree, Mass., have given general satisfaction to the citizens, and are very acceptable to the undersigned as agents of the town.

J. M. KNIGHT, J. F. BATES, H. A. MONK, Selectmen.

Since above was written, we have built another bridge in this town for a new board of town officers.

Berlin Iron Bridge Co.

EGREMONT, MASS.

Dear Sirs—The bridge put up by your company in the village of South Egremont, on September last, meets the approbation of the entire community. It not only adds greatly to the beauty of the place, but we, the Selectmen, are bound to consider it a first-class structure in every respect. Yours, etc.,

H. L. ROWE, Chairman of Selectmen.

The Berlin Iron Bridge Co.

STONINGTON, CONN.

Gentlemen—In reply to your letter of the 18th inst., I would state, that the Iron Plate Girder Bridge with concrete roadway, built by you over Pawcatuck River, between this town and the town of Westerly, R. I., in 1885, has thus far proved satisfactory to us. Before deciding upon any particular plan of bridge, I made a tour of the State for the purpose of examining and inquiring into the merits of the various styles of bridge, and sought the opinions of the local authorities relative thereto. The result of my observations convinced me that an Iron Plate Girder Bridge, with a concrete roadway, supported on iron cylinder piers, would be best adapted for the locality in question; and my reasons therefor may be briefly summarized as follows: 1st. It would obviate the presence of high and unsightly truss work in the central portion of the two villages and on the main thoroughfare connecting them. 2d. The concrete roadway would obviate the disagreeable din of a plank roadway, and would save the expense of frequent repairs that must of necessity be accompanied with a plank covering, especially in a live business locality like this, where the passing of teams is incessant, and with daily loads of from three to five tons; last, but not least by any means, the economy in first cost, and the substantial, durable character of the structure. As a matter of fact, strangers, in crossing the bridge over the concrete roadway, have aught to remind them of but one continuous street.

Very respectfully, GEO. D. STANTON, Chairman Selectmen.

The Berlin Iron Bridge Co.

WALLINGFORD, CONN.

Gentlemen—In reply to your inquiry respecting your bridges, would say that I have made inquiries, and, as far as I can learn and by my own observations, they have proved perfectly satisfactory. Yours very respectfully,

CHAS. M. JONES, Town Agent.

The Berlin Iron Bridge Co.

CLAREMONT, N. H.

Gentlemen—About eight years ago, your company built an iron bridge for this town, 108 ft. span, 20 feet roadway, and two walks, 5 feet each. The bridge has proved perfectly satisfactory, and we can cheerfully recommend it to anyone wanting a bridge.

ISAAC H. LONG,

M. S. ROSSITER,

HENRY S. SANDERS,

} Selectmen.

OFFICE OF THE RUSSELL MFG. CO., MIDDLETOWN, CONN.

Berlin Iron Bridge Co.

The iron bridge at Middlefield, which you built five years since, has given entire satisfaction to ourselves and the public travel, and is as good as new. The small bridges connecting our mills at South Farms, constructed for fire escapes, in compliance with the laws of the State of Connecticut, relating to protection of persons employed in mills in case of fire alarm, are very strong, durable, and artistic in design. Very respectfully, H. G. HUBBARD, President.

The Berlin Iron Bridge Co.:

NORTH HAVEN, CONN.

Gentlemen—We are well pleased with the iron bridge you erected for us the past season, and would recommend it to any who need structures of a similar kind.

R. T. LINSLEY,
W. B. HEMMINGWAY, } Selectmen.
F. E. JACOBS, }

OFFICE OF AMOSKEAG MFG. CO., MANCHESTER, N. H.

Berlin Iron Bridge Co.:

Gentlemen—Your favor of the 8th inst. is at hand. I am glad to say that our experience with the two iron bridges and the iron roof of our boiler-house, which your Company erected for us last summer, has been satisfactory so far.

Yours truly, J. S. LIVERMORE, Agent.

The Berlin Iron Bridge Co.:

KEENE VALLEY, N. Y.

Gentlemen—I think that the Parabolic bridge that you furnished for the town is superior to any other that I have seen. It gives perfect satisfaction.

Yours truly, MONROE HOLT, Supervisor.

The Berlin Iron Bridge Co.:

AMHERST, MASS.

Gentlemen—The iron bridge built by your Company for this town four years ago has given entire satisfaction. It appears to be as firm, strong, and unyielding now as the day it was finished, and all the indications are that it is to be its permanent condition. Respectfully yours, LEVI STOCKBRIDGE, Chairman Selectmen.

Since above was written, we have built another bridge in this town for a new board of town officers.

The Berlin Iron Bridge Co.:

GLENDALE, MASS.

Gentlemen—Referring to your favor of the 21st inst., would say, the iron bridge erected by you four years since for the town of Stockbridge, has, from its peculiar location, been subjected to a very severe trial. It has given perfect satisfaction, and is, so far as I can see, in perfect order. I would cheerfully recommend your bridge to any in need, and would be pleased at any time to meet persons who might wish to examine it.

Truly yours, F. M. ADAMS, Selectman.

OFFICE OF CHAFFEE & CALLENDER, GLENDALE, MASS.

Berlin Iron Bridge Co.:

Gentlemen—The iron bridge that you put up for us in June, 1882, has been in constant use ever since, and gives perfect satisfaction. Though light in appearance, it has been loaded heavier than any common road bridge; often is without any perceptible springing; and we cheerfully recommend it to any one who wants a good bridge. Yours truly,

CHAFFEE & CALLENDER.

The Berlin Iron Bridge Co.:

LONDONDERRY, VT.

Gentlemen—The iron bridge you built for us some two years ago has given entire satisfaction. Those who were opposed to putting in an iron bridge now consider it a good investment. I can conscientiously recommend your work to any one in want of iron bridges.

Yours very truly,
W. L. GIBSON, Chairman Selectmen.

Berlin Iron Bridge Co.:

GOSHEN, IND.

Gentlemen—Your bridge here is entirely satisfactory, and we find it to be all you claimed.

A. MYERS, Sup't of Bridges.

The Berlin Iron Bridge Co.:

STILLWATER, R. I.

Gentlemen—Your request is at hand. In reply will say, so far as the bridge you constructed in our town meets with an approbation perfectly in every particular, though we have made no severe test as to its strength. Four heavy horses with a wagon loaded with five-ton weight driven over it makes scarcely a perceptible vibration or jar on the iron rods. I think it far superior to one of wood. I don't think a wooden bridge of that length could have been built as firm as this appears to be. I would recommend iron every time in case of a new bridge.

Yours truly, J. S. APPLEBY, Pres. Town Council.

Since above was written, we have built another bridge in this town for a new board of town officers.

The Berlin Bridge Co.:

LEE, MASS.

Gentlemen—The bridges you built for us are perfectly satisfactory in every way. We do not know of anything about them but what is perfect. If we were in want of any more should not look for anything better than these have proved so far.

Yours respectfully, F. C. PHELPS, Chairman Selectmen.

The Berlin Iron Bridge Co.:

HARWINTON, CONN.

Gentlemen—Yours of the 22nd inst. is received. In reply would say, the bridge you built between the towns of Harwinton and Litchfield has been satisfactory to the traveling public in every way, and I most earnestly endorse the Berlin Iron Bridge Company as the builders of good, strong, and reliable bridges.

Very truly yours, HENRY E. HINMAN, Chairman Selectmen.

Berlin Iron Bridge Co.:

DANFORTH, ME.

Gentlemen—The iron bridge built for our town by your Company last year, and placed in position by Mr. John Towne, your Company's special agent, gives entire satisfaction. It is the universal opinion that it is the cheapest and best bridge ever built in this section of the country.

Very truly yours, GOODWIN BROTHERS, DANFORTH, ME.

The Berlin Iron Bridge Co.:

BINGHAMTON, N. Y.

Gentlemen—This is to certify that the Berlin Iron Bridge Company have built for the city of Binghamton, N. Y., under our charge, the sub-structure and super structure of an iron truss bridge, consisting of two abutments and two piers, about 1,500 yards of first-class masonry and three spans of iron truss bridge, each 161 feet long, with a roadway 24 feet wide, and two sidewalks, each 6 feet wide, with iron joist in the roadway, and that their work has been first class in every particular. The bridge is now open for travel, and the heaviest teams cross it continually with stone, lumber, and that class of loads, either walking or trotting, and it is as firm and solid as the street itself, not a tremble or a vibration of any kind being perceptible. They are well supplied with all the necessary pile drivers, derricks, hoisting engines, etc., for doing sub-structure work, and the shops are well equipped with all the necessary tools and machinery for doing work promptly and well. We never saw iron work go together so accurately as this bridge. They did their work in a thorough manner, and we can cheerfully recommend them to any party in want of a good reliable bridge.

D. T. FINCH, B. M. BABCOCK, Commissioners.
S. E. MONROE, Engineer in charge.

The Berlin Iron Bridge Co.:

BANGOR, ME.

Gentlemen—In reply to your inquiry concerning the present condition of the Plate Girder Bridge, built by your company in 1884, over the Kenduskeag stream in this city, I will say that it is certainly a success. This bridge is subject to the constant application of heavy loads throughout the entire year, and I have examined it carefully when heavily loaded, as a result of which I am satisfied that it is not only strong otherwise, but that the concrete with which it is covered adds considerably to its rigidity. As to the satisfaction it gives generally, I can only say that so far as I know our citizens are more than satisfied, and their experience indicates that a Plate Girder Bridge covered with concrete, supported on arches of corrugated iron, is the most economical bridge we can build here for a deck bridge.

Very truly yours,
P. H. COOMBS, City Engineer,

ASHLEY FALLS, MASS.

Berlin Iron Bridge Co., East Berlin, Conn.:

Gentlemen—The bridge built by your company over the Housatonic River, near the village of Ashley Falls, town of Sheffield, Mass., in the summer of 1880, is giving complete satisfaction. I have delayed answering your letter of the 6th to make inquiries, as you are aware that the friends of the bridge encountered the most determined opposition from many of the most influential men in town about having an iron bridge. But now the opposition is dead, and the last wooden bridge over the Housatonic has been built.

Truly yours,

WM. L. ABBOTT, Chairman of Bridge Committee.

The Berlin Iron Bridge Co.:

FRANCONIA, N. H.

Gentlemen—The iron bridge 94 ft. span, 16 ft. roadway, which your company built for this town in 1884, has now been in use for three years and has given entire satisfaction to everybody. We have never heard anything against the bridge in any way, and we can recommend your bridge and your company to towns in want of first-class iron highway bridges. When the bridge was built there was some talk that perhaps it was better to use wood here than iron, as we are in the midst of a lumber country where wood is very cheap: but now, after three years, we have no hesitation whatever in saying that we believe the iron bridge to be the best and cheapest investment that the town has made.

Yours truly, OSMAN PARKER, Ch. Selectmen.

OFFICE OF PALMER BROTHERS, MONTVILLE, CONN.

Berlin Iron Bridge Co.:

Gentlemen—The bridge you built for us, so far, has given entire satisfaction. It seems to meet all the requirements, and we see no reason why it will not continue to do so.

Respectfully, PALMER BROS.

The Berlin Iron Bridge Co.:

SEYMOUR, CONN.

Gentlemen—The three iron bridges built by your company for the town of Seymour four years ago have given and are giving entire satisfaction to the citizens of this town, and the opinion is general here that in a few years this town will replace the upper wooden bridge across the Naugatuck River with one of your excellent iron bridges.

Yours respectfully, C. H. LOUNSBURY, Town Agent.

The Berlin Iron Bridge Co.:

JEWETT CITY, CONN.

Gentlemen—Yours of the 24th received, and in reply would say, the bridge your company erected for us in the fall of 1879 has fully come up to the recommendations and gives perfect satisfaction, and is looked upon as a model of strength and beauty. The same may be said of the bridge your company put in for us in the summer of 1886, which has been severely tested with no signs of weakness. I will only add that the community are satisfied.

Respectfully yours,
ISRAEL MATHEWSON, Selectman of Griswold.

The Berlin Iron Bridge Co.:

ELIZABETHTOWN, N. Y.

Gentlemen—Your Parabolic Truss Bridge put up in this village in June last, gives the very greatest satisfaction. All speak in its favor. Should this town put in any more iron bridges, I am certain they would choose your bridge in preference to any other they have ever seen. It is all right as to strength, and very fine in appearance.

GEORGE W. RICE, Commissioner Highways.
A. K. DUDLEY, Supervisor.

The Berlin Iron Bridge Co. :

BUCKFIELD, ME.

Gentlemen—The two iron bridges, which you built for us some four years ago, are giving entire satisfaction, and I have no hesitation in recommending them to others in want of first-class structures. Yours truly,

A. P. BONNEY, Chairman Selectmen.

The Berlin Iron Bridge Co. :

LOWER BARTLETT, N. H.

Gentlemen—Some four years ago, your company built a bridge for the town of Bartlett. The bridge spans the east branch of the Saco River. Not a nut has been turned on the bridge since built, and the only expense incurred since is painting it over. It stands to-day the same as when built, and, for aught I know, as good. The bridge we had across the stream before this bridge was built was a wooden one, somewhat of the model of yours, but of single action, yours being double makes it much stronger, and of iron, as much better and durable, as iron is over wood. We have three covered bridges in town, and for wear this is worth the whole of them. I can cheerfully recommend your bridge to any town that wants a good, durable, and cheap bridge. Yours truly,

G. W. M. PITMAN, Chairman Selectmen.

The Berlin Iron Bridge Co. :

BIDDEFORD, ME.

Gentlemen—I desire to acknowledge a full approval of the splendid Parabolic Truss Bridge lately furnished this city by your company. It is substantially without deflection, notwithstanding the numerous weights it is required to sustain, and its contour is faultless. Respectfully, etc.,

SAMUEL F. PARCHER, Mayor.

Since above was written, we have built another bridge in this city for a new board of city officers.

The Berlin Iron Bridge Co. :

UXBRIDGE, MASS.

Gentlemen—The Parabolic Truss Bridge we bought of your company last summer, gives general satisfaction. It is strong and stiff, no shake or tremble when teams pass over it, even if it be faster than a walk. It is also ornamental as well as strong, which together, makes it a very desirable bridge to erect. After a trial of six or eight months as compared with the many other iron bridges in the market, all doubts are removed, and I call your Parabolic Truss Bridge superior to all of them. Yours respectfully,

ZADOK A. TAFT, Chairman Selectmen.

The Berlin Iron Bridge Co. :

SOUTH CANTERBURY, CONN.

Gentlemen—A letter written by your treasurer has just come to hand. The Parabolic Truss Bridge, you built for us last summer, gives complete satisfaction to us all. A few of my townsmen were bitter against it at first, but after observing it properly tested are now loud in its praise, and consider it more economical than a wooden bridge. There will hereafter be no more large wooden bridges built in this part of the country. They will be of iron. Respectfully,

GEORGE F. TILLINGHAST, Selectman.

Berlin Iron Bridge Co. :

NASHUA, N. H.

Dear Sirs—Yours received. The bridge you built for the city speaks for itself far better than I can. It is as solid as our granite hills. Truly yours,

A. M. NORTON, Mayor.

The Berlin Iron Bridge Co. :

LUDLOW, VT.

Gentlemen—The two iron bridges erected in the fall of 1883, also the one in 1885, have proven satisfactory. They have now been up long enough for us to be able to say they are first-class work, and we can recommend your company and your bridges to all parties. We would cheerfully give our time in recommending and showing our bridges to all who wish to see them. Respectfully yours,

D. R. SARGENT, Chairman Selectmen.

The Berlin Iron Bridge Co. :

NORTH SHELDON, VT.

Gentlemen—Yours received. Would say that I can heartily recommend your bridge as first-class work, and gives entire satisfaction. In the last thaw the ice jammed at the ends of the bridge so that it rose up from its abutments, but it came back all right. It must be strong and well made to stand such a pressure.

Yours truly, J. A. POTTER, Chairman Selectmen.

The Berlin Iron Bridge Co. :

SOUTH OXFORD, N. Y.

Gentlemen—Yours of January 27th was duly received, and in reply would say that the tax-payers of Oxford are much pleased with our bridge and think it is a first-class one. I do not think that there are more than ten tax-payers in town but what are pleased. Respectfully yours, J. B. WILLOUGHBY, Com. Highways.

The Berlin Iron Bridge Co. :

MAYORS' OFFICE, CITY OF TAUNTON, MASS.

Gentlemen—I desire to express to you my entire satisfaction with the two concrete iron bridges which you have erected for this city during the present season. For substantiality and convenience they are unsurpassed. Respectfully yours,

R. H. HALL, Mayor.

The Berlin Iron Bridge Co. :

TORRINGTON, CONN.

Gentlemen—We are glad to recommend your iron bridges. We have nine of them in our town, some of them being subjected to heavy traffic, and we have no hesitation in recommending them as being first-class in every respect. Some of these bridges have been in use about five years, so that we have a good opportunity to judge of their merits, and we have no hesitation in recommending them to other towns. Yours respectfully,

GEORGE A. ALLEN, E. C. HOTCHKISS, T. M. SULLIVAN, Selectmen.

The Berlin Iron Bridge Co. :

SANDSFIELD, CONN.

Gentlemen—The iron bridge you built for us five years ago, spanning the Farmington River between this town and the town of Tolland, has given entire satisfaction. J. M. FULLER, Chairman Selectmen.

The Berlin Iron Bridge Co., East Berlin, Conn. :

MALONE, N. Y.

Gentlemen—Your favor of the 28th received, and replying would say that the bridge you built for this town three years ago is all you claimed for it. It has given good satisfaction. We have not laid out one cent on it since it was built. Iron bridges are far superior to wooden. WALLACE H. JONES, Com. of Highways.

Since above was written, we have built another bridge in this town for a new board of town officers.

The Berlin Iron Bridge Co. :

LAKE VILLAGE, CONN.

Gentlemen—The bridge which you built for us some four years ago at the outlet of the lake, is a strong permanent structure, and has given entire satisfaction in every respect. When our bridge at Lake Village is in need of repairs I shall recommend an iron bridge from your company. Yours truly,

STEVEN S. AYER, Chairman Selectmen.

The Berlin Iron Bridge Co., East Berlin, Conn. :

DANIELSONVILLE, CONN.

Gentlemen—It gives me pleasure to hear, and talk with the people of the town of Killingly and Brooklyn, Conn., in reference to the bridge you have recently erected for us across the Quinebaug River. All speak highly of the structure, and I as chairman of the board who contracted with you, will say in behalf of said board, that your contract is more than filled. You gave us a better bridge than we contracted for.

Yours truly, E. R. BURLINGAME, Chairman Selectmen.
Killingly, and Chairman Building Committee.

The Berlin Iron Bridge Co. :

HARTWICK SEMINARY, N. Y.

Gentlemen—Your favor of Jan. 31st received. In reply would say the bridges I purchased of your company were satisfactory in every respect.

Respectfully yours, H. E. KINNE, Commissioner of Highways.

The Berlin Iron Bridge Co. :

AVOCA, N. Y.

Gentlemen—We have eleven of your bridges in our town; we have also some bridges in our town built by other companies but your bridges are liked the best. We are well pleased with them and think we have the best bridge we can get for the money they have cost us.

Respectfully yours, L. MATHEWSON, Commissioner of Highways.
We have built two Iron Bridges for this town since above was written.

The Berlin Iron Bridge Co. :

CAMPTON, N. H.

Gentlemen—The iron bridge erected by the Berlin Iron Company gives good satisfaction and all are pleased with it. Yours respectfully,

C. W. PULSIFER, A. P. ROWE, D. B. PULSIFER, Selectmen.

Since above was written we have built another bridge in this town for a new board of town officers.

The Berlin Iron Bridge Co. :

NORTHFIELD, N. H.

Gentlemen—The iron bridges that our town bought of you in 1881, have proved satisfactory. We have had no repairs to make on them, but to keep them painted. We had the driveways concreted in 1885, and we like it.

Yours respectfully, FRANK H. HILL, For the Selectmen.

The Berlin Iron Bridge Co. ;

GREAT BARRINGTON, MASS.

Gentlemen—Your letter asking me my opinion of your bridges, received. We have nine of them here, which have been built within the last ten years. They have proved satisfactory, and I would gladly recommend them to anyone wishing to build a bridge. For safety and durability, as well as workmanship, they cannot be excelled.

Yours truly, W. W. LANGDON, Chairman Selectmen.

Since above was written we have built another bridge in this town for a new board of town officers.

The Berlin Iron Bridge Co. :

WATERBURY, CONN.

Gentlemen—The 11 iron bridges which we have had in our town of your make are giving entire satisfaction. The spans vary from 40 to 205 ft., and are all Parabolic Truss. Some of these bridges are subjected to the heaviest city traffic, as our truck teams cross them almost every hour of the day, but under this severe and heavy traffic they show no danger of rattling or vibrating in any way. We prefer your Parabolic Truss Bridge to any bridge made, as we have had experience with other makes and are now taking down another iron bridge, which has been put up only about ten years, and have purchased one of your Parabolic Truss Bridges to replace it. This is the second bridge we have taken down within a few years, to be replaced by your Parabolic Truss Bridge. We consider your Parabolic Truss Bridge the best and most complete road bridge, both in strength and workmanship, of any bridge manufactured, and have no hesitation in recommending your company and your bridge to others in want of first-class work. Yours truly,

BENJ. SEDGWICK, J. B. DOHERTY, Selectmen.

I fully concur in the recommendation of Benj. Sedgwick, Selectman, in relation to the Parabolic Iron Bridge made by the Berlin Iron Bridge Company of East Berlin, Conn. My experience with these bridges in Waterbury, Conn., will warrant the endorsement.

Henry Boughton, Mayor of Waterbury.
We have built six Iron Bridges for the city and town of Waterbury since the above was written besides 18 spans of bridge for the Meriden, Waterbury and Connecticut River Railroad Company.

The Berlin Iron Bridge Co.:

GUILFORD, N. Y.

Gentlemen—The bridge you built across the Unadilla River for our town and the town of Unadilla, in the year 1884, has been thoroughly tested, and I take pleasure in saying it is in every way as represented and gives entire satisfaction.

Truly yours, J. J. GODFREY, Commissioner of Highways.

The Berlin Iron Bridge Co.:

MONROE, ME.

Gentlemen—The iron bridge you put in for us last year, has given entire satisfaction. Even those opposed to iron bridges are satisfied that it is the best and cheapest that could be erected. I have not heard a man find fault with the bridge in any particular. It is all we could have hoped for.

Yours truly,
W. B. F. TWOMBLY, Chairman Selectmen.

The Berlin Iron Bridge Co.:

OAKLAND, ME.

Gentlemen—Four years ago last summer you erected for our town an iron bridge of two spans 61 ft. each, 20 ft. roadway, 5 ft. walk. We consider the bridge fully up to your representation; in every respect a first-class structure. The only outlay upon the bridge since its erection has been for one coat of paint, and of course for the necessary plank.

Yours respectfully, J. WESLEY GILMAN, Chairman Selectmen.

The Berlin Iron Bridge Co.:

NORTH CONWAY, N. H.

Gentlemen—The bridge built for the town of Conway, by your Company three years ago, has given entire satisfaction to the town and traveling public, and it gives me great pleasure to recommend your work to other towns that contemplate building bridges.

Yours truly, HIRAM DOW, Chairman Selectmen.

The Berlin Iron Bridge Co.:

MERIDEN, CONN.

Gentlemen—Yours of the 6th inst received. We consider the bridges erected by you for our factories last summer as first-class. They are perfectly solid, do not spring or shake, and on this account think them superior to anything of the kind which we have ever tried before.

Yours truly,

MERIDEN BRITANIA CO., H. C. WILCOX, President.

Mr. Wilcox is also President of the Meriden Waterbury and Connecticut River Railroad. We built 34 spans of Iron Bridge for this company in the last two years; in fact, we furnished every Iron Railroad or Highway Bridge over the entire line of the road.

The Berlin Iron Bridge Co.:

BLACK BROOK, N. Y.

Gentlemen—The iron bridge erected by you for the town of Black Brook last spring at Union Falls has given entire satisfaction thus far to the users of it. It is regarded by the tax-payers who have seen it as a satisfactory investment of their money.

Yours truly, H. W. STETSON, Commissioner of Highways.

The Berlin Iron Bridge Co.:

LYNDON, VT.

Gentlemen—We have yours asking how we like the two iron bridges which you built for us two years ago. In answer, I would say with pleasure, that they have given entire satisfaction. Our largest iron bridge stands between the railroad and four big saw-mills, where loads of lumber all pass over this bridge with big six-horse teams daily, and it stands firm. Our town has sixteen covered bridges, which costs \$64.00 a year to keep them snowed. I will vote iron every day.

Yours truly, W. W. HEATH, First Selectman.

The Berlin Iron Bridge Co.:

CONKLIN N. Y.

Gentlemen—The bridge which your Company built for us some three years ago has given entire satisfaction, and we have no hesitancy in recommending the bridge to other towns in want of the best. We have another iron bridge—a Pratt Truss—which was built for our town this year, but we consider your bridge the best kind of a bridge.

Yours truly, LEVI L. ROWE, Com. Highways.

Since above was written we have built another bridge in this town for a new board of town officers.

The Berlin Iron Bridge Co.:

PLAINVILLE, CONN.

Gentlemen—The bridge built for our town three years ago has been thoroughly tested, and is satisfactory in every particular. The destruction of the old bridge by fire and the replacing it by this one has been a profitable investment for us. No more wooden bridges here.

Respectfully, R. A. POTTER, Selectman.

The Berlin Iron Bridge Co.:

FRANCONIA, N. H.

Gentlemen—In reply to yours, permit me to say that, so far as I know, the bridge you built for us last spring has given universal satisfaction. In general appearance we like it, and have detected no perceptible trembling about it.

Yours truly, F. D. V. GARRETSON.

The Berlin Iron Bridge Co., East Berlin, Conn.:

ROCKLAND, ME.

Dear Sirs—I received your letter of inquiry in regard to the bridge you built for us last winter. It gives good satisfaction.

Yours truly,
WM. L. ULMER, Street Commissioner.

The Berlin Iron Bridge Co.:

WESTON, CONN.

Gentlemen—Yours of January 28th at hand. In reply would say, that the iron bridge, built for the town of Weston by the Berlin Iron Bridge Company, has given good satisfaction. We have never heard one word of fault found with it, and all say we have got a first-rate bridge.

Yours truly,
M. V. B. ROWLAND, Chairman Selectmen.

The Berlin Iron Bridge Co.:

ORWELL, VT.

Gentlemen—Yours of the 8th inst. at hand. In reply would say, the bridge you erected for us this season has given entire satisfaction.

Yours truly, JOHN HALL, Chairman Selectmen.

The Berlin Iron Bridge Co.:

CHAMPLAIN, N. Y.

Gentlemen—The Parabolic Truss Bridge, 105 feet span, 14 feet roadway, built for us two years ago, has proved satisfactory to the commissioner and also the best men of the town. I can cheerfully and safely recommend the Parabolic Truss Bridge to any town that needs a safe, first-class iron highway bridge.

Yours respectfully, LEMUEL NORTH, Com. Highways.

The Berlin Iron Bridge Co.:

PUTNEY, VT.

Gentlemen—The iron bridge you built for our town gives good satisfaction, and all that have spoken about it are well pleased with it. Any town in want of a good iron highway bridge, in my opinion, will find the Parabolic Truss Bridge, built by the East Berlin Iron Bridge Company, to be just what they want.

Yours truly, M. C. INGALLS, Chairman Selectmen.

The Berlin Iron Bridge Co.:

MT. MORRIS, N. Y.

Gentlemen—The iron bridge and the stone work which you erected for this town over the Cesaqua at Tuscarora the past summer, is, in all respects, satisfactory to the public, myself, and the engineer, E. A. Fisher, of Rochester.

Yours respectfully, WILLARD SHERMAN, Com. Highways.

The Berlin Iron Bridge Co.:

EUCLID, N. Y.

Gentlemen—Our bridge gives general satisfaction. It is a nice structure, and all went off without any disagreement on either side. Yours truly,

EDWARD CLAY, Com. Highways.

The Berlin Iron Bridge Co.:

BUXTON, ME.

Gentlemen—We have two of your bridges across the Saco River, that divides Buxton from Hollis; one span of 76 feet, built in 1885, the other two spans of 116 and 119 feet, each built in 1880. Both bridges are as perfect in form to-day as when built, and we are confident there is not a person in either town but that is fully satisfied with both bridges. As fast as our bridges need repairs, we are sure the tax-payers in town will be in favor of giving the preference to the Berlin Iron Bridge Company. Very respectfully,

JOHN G. LOCKE,
GEO. S. ADAMS, } Selectmen.
J. H. BRADBURY,

The Berlin Iron Bridge Co.:

WOODBURY, CONN.

Gentlemen—We hereby certify that the iron bridge erected by your company last fall, continues to give the best of satisfaction, and, as agents of the town, we shall recommend the erection of iron instead of wood, as our bridges need replacing in the future.

W. A. STRONG,
CALVIN LINES, } Selectmen.
VINCENT M. BARNES,

We have built two Iron Bridges for this town since above was written.

The Berlin Iron Bridge Co.:

RICHFORD, N. Y.

Gentlemen—Yours of the 27th ult. received, and in reply will say, that your bridge so far has given good satisfaction to the public. We think that we have as good a bridge as there is in this section. Yours truly,

M. L. GEE, Com. of Highways.

The Berlin Iron Bridge Co.:

ROMFORD, CONN.

Gentlemen—As far as I know, the bridges are entirely satisfactory.

Yours truly, S. H. CLARK, Chairman Selectmen.

The Berlin Iron Bridge Co.:

CHARLESTON, N. Y.

Gentlemen—Yours of the 7th at hand. In answer to how we like the bridge, it gives entire satisfaction; all of the community are well satisfied.

Yours truly, SIRAS GOEWY, Com. of Highways.

The Berlin Iron Bridge Co., East Berlin:

RICHFORD, VT.

Gentlemen—The iron bridge of 118½ feet span, 20 feet roadway, and two walks of five feet each, built by your company for our town last summer, proves satisfactory in every respect. It is stiff and rigid. We allow all to drive on it as they please. Would take pleasure in recommending your bridge above any other we have ever seen, to parties wishing to build iron bridges. Yours truly,

J. S. DAILEY, Selectman.

OFFICE OF LAKE GEORGE AND WARRENSBURG PLANK ROAD CO.

The Berlin Iron Bridge Co.:

WARRENSBURG, N. Y.

Gentlemen—We are to-day in receipt of your letter of the 28th inst, asking "if the iron bridge built by you still continues to give general satisfaction, and also can we recommend the bridge made by you, to other parties." The one built for us is as erect and firm as upon the day it was put up, and has not cost us a cent, with the exception of painting. We regret very much that the advices and wishes of your agent, Mr. John Towne, "that we erect 16 ft. instead of a 13 ft. roadway," was not acceded to by us, as it would have given the bridge a much better appearance.

Respectfully yours, HENRY GRIFFING, Treasurer.



The Berlin Iron Bridge Co., East Berlin, Conn.:

HUDSON, N. H.

Gentlemen—Your favor of the 17th, with bill for balance due company on Taylor's Falls Bridge, was received. I handed the bill to the treasurer, and he will immediately forward the amount, if he has not done so already. As the bridge is now virtually completed, a few words expressive of my opinion may not be out of place at this time. When we contracted for the bridge last spring, we expected a good, permanent structure; but that now it is completed, I can say that our expectations have been more than realized; it is a *better* bridge than I expected, in many respects, and in saying this I know I express the sentiments of *all* the committee, both that for this town and for Nashua. I believe the contract to be carried out in good faith, not only in the main, but in all the details, and in some respects exceeded. Where many contractors would have undertaken to have cut corners, your company have been perfectly square, and this has been done mainly without any urging or pressure from the committee. During the erection of the bridge I was present nearly every day, and saw its different parts put together, and the connections made and fastened, and everything seemed to be done in the most thorough manner possible. I consider it to be a permanent, durable structure, and not only a lasting honor to the Berlin Iron Bridge Co., that built it, but also to the committee that had it in charge, and to the town of Hudson and the city of Nashua. And I feel myself personally, and in behalf of the committee, and the town of Hudson and city of Nashua, under obligations to you, for the gentlemanly treatment we have received, and for the faithful manner in which you have executed the contract.

Yours truly, KIMBALL WEBSTER,

Chairman Committee for the town of Hudson, and Civil Engineer.

The Berlin Iron Bridge Co., East Berlin, Conn.:

NASHUA, N. H.

Gentlemen—In behalf of the committee of the city of Nashua, I most heartily endorse what Mr. Kimball Webster says in his letter of the 21st. Yours truly,
J. W. HOWARD, Chairman of Committee of Nashua, N. H.

The Berlin Iron Bridge Co., East Berlin, Conn.:

NASHUA, N. H.

Gentlemen—I take pleasure in saying that I believe the statement made by Kimball Webster, Esq., of Hudson, in his letter to you dated January 21, 1882, is correct in every particular, so far as my knowledge extends.

Yours respectfully, BENJ. FLETCHER, JR., Mayor.

The Berlin Iron Bridge Co.:

FALMOUTH, ME.

Gentlemen—Your favor received, and am happy to be able to comply with your request, and I trust in a satisfactory manner. Since the erection of our bridge I have never heard a word in regard to it except in its praise. It is a new thing with us, and consequently has been discussed very freely, and from all I have heard from our

town people, and from the people from adjacent towns, and also from railroad men, the verdict from all is the same. A very nice, pleasing, and substantial bridge. It gives eminent satisfaction, and from my own knowledge (being present all the time during its erection, and seeing how nicely everything fitted together) I have no hesitation in saying that I think the Berlin Parabolic Iron Bridge superior to any other that I have ever seen, comprising, as it does, great strength, beauty of outline, and nicety of finish.

JAMES E. MERRILL, Chairman Selectmen.

The Berlin Iron Bridge Co.:

WHATELY, MASS.

Gentlemen—We can truly say that we are very much pleased with the Parabolic Truss Bridge you erected for our town last summer. Our people all speak well of it. A citizen from a neighboring state gave it quite a thorough examination, and said that he had seen a great many iron bridges in his travels, but had seen nothing that suited him as well as your Parabolic Truss Bridge, and should advise his town to use your bridge in preference to any other. Previous to contracting for your bridge we examined bridges made by other companies, and although we paid you more money than was asked by other companies, we consider it money well invested, and have never regretted our decision, which was unanimously in favor of your Parabolic Truss Bridge.

Yours truly,

C. G. CRAFTS,
WM. BARNARD, } Selectmen of Whately.
E. A. WARNER, }

The Berlin Iron Bridge Co.:

WILLSBORO, N. Y.

Gentlemen—Your letter of recent date, asking me how I like your bridges after one year's trial, has been received. I will say that they are by far the best bridges in Northern New York; this is the unanimous opinion of every one who has seen them, as far as I can learn. We do not have any sign up forbidding any one to "Ride or drive on this bridge faster than a walk under \$5 fine." Our town people all look with pride and pleasure at this beautiful bridge, and why? because it possesses the three special qualities: strength, rigidity, and it is an ornamental construction. It is nearly as rigid as our noted Adirondack mountains. Anyone wishing any information I can give in regard to your bridge can get it by dropping me a line.

Yours respectfully, A. CURRIER, Com. of Highways.

The Berlin Iron Bridge Co.:

CLINTON, CONN.

Gentlemen—The bridge you built between the towns of Clinton and Madison, some four years ago, has given universal satisfaction to those using it, and we recommend your work to those in need of similar bridges.

C. E. WATROUS,
S. LEANDER STEVENS, } Selectmen.



The Berlin Iron Bridge Co.:

HUNTSVILLE, CONN.

Dear Sirs—The iron bridge placed by your company across Housatonic River between this town and Salisbury some two or more years ago, gives the best of satisfaction to the traveling public. Very heavily loaded teams seem to make but little impression on it, and they travel across with perfect confidence.

Yours truly, M. U. DEAN, Chairman Selectmen.

The Berlin Iron Bridge Co.:

WILSON, N. Y.

Gentlemen—Our town have now in use three of your iron bridges, as well as others of different make. We, as town officers, would say that your bridge gives the best satisfaction of any we have in use, and so far, we cannot see but what they are, and have done all that they were recommended to do. We would truthfully recommend your Parabolic Truss Bridges to any towns who intend to buy an iron bridge. Respectfully yours,

ABRAM HUTCHINGS, Com. of Highways.
C. M. MARTLE, Town Clerk.

The Berlin Iron Bridge Co.:

LE ROY, N. Y.

Dear Sirs—We three Highway Commissioners, also the town people, consider we have an excellent bridge, and it gives good satisfaction. We are ready and willing to recommend your bridges to any towns needing a bridge.

Yours respectfully, WM. R. HALBERT, Com. of Highways.

The Berlin Iron Bridge Co.:

RAYMONDVILLE, N. Y.

Gentlemen—The bridges put up by your company in our town are giving good satisfaction. The 290 ft. span is a Leviathan, and is well spoken of by all.

Yours truly, A. A. WOODARD, Com. of Highways.

The Berlin Iron Bridge Co.:

CAPE VINCENT, N. Y.

Dear Sirs—Yours of the 29th ult. received. Would say in reply that we can heartily recommend your Parabolic Truss Bridge. It has proved to be satisfactory in every respect, and if we had another one to build we should give you our order.

Yours truly, WARREN CASLER, Com. of Highways.

The Berlin Iron Bridge Co.:

LITCHFIELD, CONN.

Gentlemen—The town of Litchfield have now in use four bridges built by the Berlin Iron Bridge Company which give entire satisfaction.

Respectfully yours, JACOB MORSE, Chairman Selectmen.

Since above was written, we have built another bridge in this town for a new board of town officers.

The Berlin Iron Bridge Co.:

JAY, N. Y.

Dear Sirs—We have one of your bridges in our town, span 128 feet, roadway 18 feet, two sidewalks six feet each, put up in 1881, and gives perfect satisfaction in every way.

Yours respectfully, WELLS F. NYE, Com. of Highways.

The Berlin Iron Bridge Co.:

MERIDEN, CONN.

Gentlemen—The Plate Girder Bridge you built for this city last summer is a solid, substantial structure, first-class in every way, and entirely satisfactory in every respect.

Yours truly, S. C. PIERSON, Engineer.

The Berlin Iron Bridge Co.:

WASHINGTON MILLS, N. Y.

Gentlemen—I am much pleased with the three iron bridges you erected last summer for the town of New Hartford, and it gives me pleasure to recommend them.

Yours truly, CHAS. H. FULLER, Com. of Highways.

OFFICE OF CITY ENGINEER, MANCHESTER, N. H.

The Berlin Iron Bridge Co.:

Gentlemen—The bridge recently completed by the Berlin Iron Bridge Company in this city is of the following dimensions: at the west end, 159½ feet, of trestle 40 feet wide; bridge across the Merrimac River 411 feet, divided into three equal spans. This bridge is a double-deck bridge, the lower driveway being 18 feet clear, without sidewalks, the upper, 26 feet driveway, with six feet walks on each side; total width, 40 feet. This is followed by 404 feet of iron trestle, then a 54½ feet double-deck bridge across the lower canal, so called, the lower deck having two driveways, 15 feet each in the clear, then terminating with 50 feet of iron trestle, making 1,076 feet of bridging, 40 feet wide, consisting of 26 ft. drive and two six ft. sidewalks. There is also an additional bridge of 53½ feet span across the upper canal, so called. At the completion of the first contract with the Berlin Iron Bridge Company, a committee of civil engineers and master mechanics was appointed to make a thorough examination of the workmanship, material, and strength of the bridge. This examination proved highly satisfactory. A strain test, probably as severe as any to which the bridge will ever be subjected, was applied in several different forms, and showed a deflection of from 26-100 to 42-100 of an inch, the last being obtained by a sudden jar at the center of the middle span, where these tests were taken. I shall take pleasure in recommending your work and showing our bridge to any party in want of first-class work.

Respectfully, GEO. H. ALLEN, City Engineer.

The Berlin Iron Bridge Co.:

ORWELL, N. Y.

Gentlemen—The bridge that we bought of you, and erected by Mr. Cooley the last season, is the first iron bridge in the town, and has been examined and watched very closely, since it was erected, by our people and those of other towns, and they all say it is as nice a bridge as they ever saw, and they call it a beauty.

Yours truly, HENRY HILTON, Com. of Highways.

Since above was written, we have built another bridge in this town for a new board of town officers.

The Berlin Iron Bridge Co.:

NEWPORT, N. H.

Gentlemen—The iron bridge which your Company put in this town in December, 1886, is in every way a first-class bridge, and our town is well pleased with the same. Yours very truly, MILTON S. JACKSON, Chairman Selectmen.

Since above was written, we have built another bridge in this town for a new board of town officers.

The Berlin Iron Bridge Co.:

WESTON, VT.

Gentlemen—I improve this opportunity to write to you in regard to the iron bridge you built for us last fall. We are well satisfied with the bridge. It is fully up to the contract, and I can recommend your bridge to any town in need of an iron bridge, and your Company as one that will do all that you agree to do.

Yours respectfully, W. W. MANNING, Chairman Selectmen.

The Berlin Iron Bridge Co.:

WEST HAVEN, VT.

Gentlemen—The bridge put up for us by the Berlin Iron Bridge Company (85 feet span) gives good satisfaction in every respect. It is all that it was recommended to be. Yours, etc., R. C. ABELL, Chairman of Selectmen.

The Berlin Iron Bridge Co.:

PHILADELPHIA, N. Y.

Gentlemen—Yours of the 8th received. In reply would say, the three bridges erected in our town by the Berlin Iron Bridge Company the past summer, thus far are satisfactory, and are spoken of as strong and symmetrical, and to all appearances will be very durable. Yours truly, GEO. G. WHITE, Com. Highways.

Since above was written, we have built another bridge in this town for a new board of town officers.

The Berlin Iron Bridge Co.:

BARTON, VT.

Gentlemen—Yours of the 8th inst. received. The bridge does not come under my every-day observation. I know of no imperfection, and it is highly complimented by those who are familiar with it. While the iron bridge is something expensive to start with, I think that time will prove them to be much the cheapest in the end, and were I to administer to the wants of the town in the future, I should patronize your Iron Bridge Company. Respectfully yours,

J. P. BALDWIN, Selectman.

The Berlin Iron Bridge Co.:

AUDITOR'S OFFICE, SHELBYVILLE, IND.

The Board of Commissioners authorize me to say to you that they consider your bridge built in this county one amongst the best, if not the best altogether, that has ever been put up by any company for them. I speak in reference to iron bridges only.

Respectfully, etc., JAMES WILES, Auditor.

The Berlin Iron Bridge Co.:

NORTH ADAMS, MASS.

Gentlemen—We have five of your bridges in our town, also five other bridges built by different companies. Yours are, without doubt, the best bridges we have.

Yours respectfully, F. H. GOODRICH, Chairman Selectmen.

The Berlin Iron Bridge Co.:

PLYMOUTH, CONN.

Gentlemen—The two iron bridges, built by you in our town some two years since, give perfect satisfaction, and I have yet to hear any expressions in regard to them except in their praise: namely, neat, substantial, and durable. We are much pleased with the concrete covering. At present, the surface is as smooth as when completed, and appears to protect the plank from decay, and makes a very solid structure in connection with the iron bridge. From my present experience, I should recommend concrete. Yours truly, BYRON TUTTLE, Chairman Selectmen.

The Berlin Iron Bridge Co., East Berlin, Conn.:

BRISTOL, CONN.

Gentlemen—The iron bridge, you built for us last July, gives entire satisfaction. We think it is the best highway bridge we ever saw. Yours truly,

C. L. FRISBIE, Chairman Board of Selectmen.

We have built two Iron Bridges for this town since above was written.

The Berlin Iron Bridge Co., East Berlin, Conn.:

PITTSFIELD, MASS.

Gentlemen—We are pleased to be able to say to you that the bridge which your company built for the town of Pittsfield last summer, proves very satisfactory to the public.

GEO. Y. LEARNED.

The Berlin Iron Bridge Co., East Berlin Conn.:

SALEM, N. Y.

Gentlemen—The two iron bridges your company built for the town of Salem are models of construction, and are perfectly satisfactory to the tax-payers as well as myself. I am compelled to admit their superiority to the other iron bridges of the town put up by three other companies. Yours truly,

RUFUS COON, Commissioner Town of Salem.

The Berlin Iron Bridge Co., East Berlin, Conn.:

WESTFIELD, MASS.

Gentlemen—In reply to yours of the 15th, I am pleased to say that all of the bridges you have built for me, as engineer in charge of the work, have been perfectly satisfactory, not only to myself, but for the towns and corporations for which they were constructed. The two bridges built for the town here, and the 300 ft. bridge for The Fairfield Paper Co. at Fairfield, are the most firm and perfectly adjusted, for structures of their kind, with which I am acquainted. You know that some years ago I had some doubts as to the advantage of the Parabolic Truss, but I am free to say, *it gives the best results, for amount of material and cost, of any bridge I have had charge of.*

Yours, L. F. THAYER, Civil Engineer.

The Berlin Iron Bridge Co., East Berlin, Conn.:

THOMPSONVILLE, CONN.

Gentlemen—Your bridges are all right and give perfect satisfaction, and the Concrete bridge I would recommend as the best. Yours respectfully,

J. P. DAVIS, Selectman.

The Berlin Iron Bridge Co., East Berlin, Conn.:

STILLWATER, R. I.

Gentlemen—The two iron bridges furnished by you for this town are just as good as the day they were placed, and are perfect specimens of their kind, and prove to us that the iron bridge is more economical than timber structures.

Respectfully yours, A. B. HAYWARD, Pres. Town Council.

The Berlin Iron Bridge Co., East Berlin, Conn.:

CANISTEO, N. Y.

Gentlemen—Yours of November 30th at hand. In reply would say that the bridge you built for us last July, gives entire satisfaction in every way. It is a beauty, and is admired by every one who sees it. For strength, style, and finish, it has no superior in the country. There was quite a little opposition to your bridge at the time that I made the contract, but those that opposed it then are the loudest in its praise now. I shall be most happy to recommend your bridge to any town that are in need of bridges. Most truly yours,

JAMES ROBLEE, Com. of Highways.

The Berlin Iron Bridge Co., East Berlin, Conn.:

WOODBURY, CONN.

Gentlemen—The three iron bridges put up by your company have given satisfaction in every respect; both in workmanship and material. They have stood the test of three years' travel, and show no sign of wear or need of repair. Our taxpayers are satisfied they have value received for their money.

Truly, W. A. STRONG, Chairman of Selectmen.

The Berlin Iron Bridge Co., East Berlin, Conn.:

WASHINGTON, CONN.

Gentlemen—In reply to yours of February 15th, I would say that we have had six of your bridges since 1879, we have found your work satisfactory, and have been well pleased with the courtesy, accommodation and square dealing that we have always received from your company. Yours truly,

ORESTES HICKOX, Selectman.

The Berlin Iron Bridge Co., East Berlin, Conn.:

MERIDEN, CONN.

Gentlemen—The iron bridge you built for the town of Meriden last year, is giving complete satisfaction.

Yours truly,

LEGRAND BEVINS, First Selectman.

The Berlin Iron Bridge Co., East Berlin, Conn.:

NEW WOODSTOCK, N. Y.

Gentlemen—In reply to yours of the 15th, I would say that we have got 15 iron bridges in our town, and good ones, too, but think and know that the bridge you put up for us in Cazenovia Village in 1887, is the best iron truss bridge we have got in town, and would say that the bridge you put up for the town in 1888 at New Woodstock, for a short span is the very best bridge that we have got in our town, and is a good-looking bridge. The Woodstock bridge gives the very best of satisfaction. The people are well pleased with said bridge, and it is the best bridge for this reason, that there are no wood joists to rot on said bridge, all the wood is the plank.

Respectfully yours, M. O. SMITH, Highway Commissioner.

The Berlin Iron Bridge Co., East Berlin, Conn.:

COLLINSVILLE, CONN.

Gentlemen—We take pleasure in saying that the bridge constructed by your company last summer across the Farmington River in this place is a success in every way. It is a credit to the town and to the builders, and the way in which the difficult work of removing the old structure was accomplished, and the new bridge erected in its place, received only favorable comment from all who watched the progress of the work. If the town of Canton needs any more work of this kind its representatives will certainly call first upon the Berlin Iron Bridge Co.

Yours truly, C. H. BLAIR, Supt. and Selectman.

The Berlin Iron Bridge Co., East Berlin, Conn.:

SUFFIELD, CONN.

Gentlemen—Your letter, of February 14th, received. In reply would say that the three iron bridges, built by your company for this town in 1888, are giving perfect satisfaction, and are ornamental as well as durable, especially the 129 ft. span deck bridge is spoken of by every one passing over it as a very firm and handsome structure. Would recommend your work to all those in need of first-class bridges. Yours respectfully, EDMUND HALLADAY, Chairman of Selectmen.



The Berlin Iron Bridge Co., East Berlin, Conn.: WEST HAVEN, CONN.

Gentlemen—The bridge at Oyster River, put in position by your company last July, gives complete satisfaction. I heartily commend your company to others for promptness and square dealing in bridge building.

Yours truly, WALTER A. MANN, Chairman of Selectmen.

The Berlin Iron Bridge Co., East Berlin, Conn.: WAREHOUSE POINT, CONN.

Gentlemen—The bridge which you built for us last August is all right, and deserves a recommend from us. It is substantial and first-class, work done according to contract, which is more than every town can say concerning bridge companies.

Yours respectfully, S. D. ROCKWELL, Selectman.

The Berlin Iron Bridge Co., East Berlin, Conn.: NEW HARTFORD, CONN.

Gentlemen—Your favor of the 14th at hand, and in reply would say, it affords us great pleasure to state that the bridge built by you in this town is giving perfect satisfaction, both to ourselves and the public. Respectfully yours,

H. N. GATES,
FRANKLIN WATSON, } Selectmen.
DANIEL C. MERRETT,

The Berlin Iron Bridge Co., East Berlin, Conn.: FAIRFIELD, MASS.

Gentlemen—The bridge you built for us last year is in perfect condition, and we have every reason to believe it to be fully up to your representation.

Yours truly, FAIRFIELD PAPER CO.

The Berlin Iron Bridge Co., East Berlin, Conn.: GREENWICH, CONN.

Gentlemen—The bridge built by your company at Glenville gives perfect satisfaction.

Yours truly, J. A. LOCKWOOD, First Selectman.

The Berlin Iron Bridge Co., East Berlin, Conn.: MIDDLEFIELD, MASS.

Gentlemen—The bridge which you built for us the past season is perfectly satisfactory in every way. I would recommend the Berlin Iron Bridge as the bridge for towns to purchase.

Yours truly, ASHER PEASE, Chairman of Selectmen.

The Berlin Iron Bridge Co., East Berlin, Conn.: WALDEN, VT.

Gentlemen—It is with pleasure that I enclose you check for \$3,500 the balance due on the Highgate bridge. I am more than satisfied with the bridge, and with the manner in which you carried on the work of erecting it. I think it is a credit to your company. I remain, as ever,

Yours, H. W. VARNUM, State Commissioner.

The Berlin Iron Bridge Co., East Berlin, Conn.: STAMFORD, CONN.

Gentlemen—Both of the iron bridges that you built for us are giving perfect satisfaction. One of 142 ft. span, 20 ft. roadway, was built in 1887 at the foot of a short sharp hill, and it has withstood perfectly the severe strain to which it has been subjected. The other is of two spans of 57½ feet, and 35 ft. roadway, built last year. We consider your iron bridges the best in the market in principle, material and workmanship.

WM. R. LOCKWOOD,
J. WOOLSEY SELLECK, } Selectmen.
W. W. SCOFIELD,
WM. B. COCHRANE, Engineer in Charge.

The Berlin Iron Bridge Co., East Berlin, Conn.: ORWELL, N. Y.

Gentlemen—I can cheerfully recommend your bridges, as we have two in our town, one 150 ft. span, the other about 110 ft. span, and entirely satisfactory to the town.

Yours truly, JOHN WASHBURN, Highway Commissioner.

The Berlin Iron Bridge Co., East Berlin, Conn.: ONEONTA, N. Y.

Gentlemen—Yours of the 15th received. Would say that our bridge has been completed to our entire satisfaction, and, as far as I can see, this fills the bill in every way. We have three iron bridges in our town, built by different iron bridge companies, but this one beats them all.

Yours respectfully,
S. S. KILBORN, Commissioner Highways.

The Berlin Iron Bridge Co., East Berlin, Conn.: SHERMAN, N. Y.

Gentlemen—Yours of the 15th received and noted, and in reply would say that I consider the bridge that you built for the town of Sherman last summer a good one in every respect. I consider the cylinder piers better in a good many respects than any other kind of abutments, and think I would use them entirely. The town of Sherman has reason to feel proud of the bridge you built.

Very respectfully yours, GEO. SANDERSON, Com. Highways.

The Berlin Iron Bridge Co., East Berlin, Conn.: MASSENA, N. Y.

Gentlemen—Yours of the 15th at hand. In regard to the bridges you speak of, they are giving the best of satisfaction. The bridge at the Springs is said to be, by people visiting at the Springs from all over the United States, the best bridge they ever saw in any place.

Yours truly, H. RUSSELL, Com. Highways.

The Berlin Iron Bridge Co., East Berlin, Conn.: SOUTH MANCHESTER, CONN.

Gentlemen—I have your favor of the 14th inst., and take great pleasure in replying that the bridge built for us last summer is perfectly satisfactory in every particular, and more than fulfilled the specifications in the contract.

RICHARD O. CHENEY, Gen. Manager, South Manchester R. R. Co.



The Berlin Iron Bridge Co., East Berlin, Conn.: NEWARK VALLEY, N. Y.

Gentlemen—The universal verdict in regard to the bridge you built for us last season is "the best I ever saw." Personally, I wish to say something in appreciation of your promptness in fulfilling the contract on your part. The time given you was very short, and the circumstances such that the public would have been greatly inconvenienced by delay on your part. Respectfully yours, etc.,
JNO. M. CLIFFORD, Com. Highways.

MALONE, FRANKLIN CO., N. Y.

The Berlin Iron Bridge Co., East Berlin, Conn.:

Gentlemen—We have two of your bridges, one built six or seven years ago, which has given entire satisfaction in every respect, so we thought we would try you again last year. Would say I got just what I bought, a Parabolic Truss 83 feet long; it gives entire satisfaction. The town are satisfied and so am I.
GEO. C. SPENCER, Com. Highways.

The Berlin Iron Bridge Co., East Berlin, Conn.: SHELDON, VT.

Gentlemen—Your company has constructed, at different times, three iron bridges in this town, the last of which is a beautiful suspension bridge of 250 feet span, and it is due to the company, that we should say that we fully appreciate the fair and honorable manner in which your company have in every instance dealt with the town, and we cheerfully recommend your company to all persons or municipalities who may want anything in your line. Very respectfully yours,

ROBERT MCLEOD,
B. A. BEATY, } Selectmen.
P. B. B. NORTHROP, }

The Berlin Iron Bridge Co., East Berlin, Conn.: GREAT BARRINGTON, MASS.

Gentlemen—Your letter of some days since was duly received. We now have nine iron bridges in this town built by your company, and one a Pratt truss, built by another company. The fact that the contract for our new iron bridge in 1888, was awarded to your company, several others competing for it, shows that after years of trial, we still consider your bridges among the best. The Parabolic truss recommends itself to us for its pleasing appearance as well as for its strength and durability.
Yours truly, A. C. COLLINS, Chairman of Selectmen.

The Berlin Iron Bridge Co., East Berlin, Conn.: BIDDEFORD, ME.

Gentlemen—The bridge you built for the city of Biddeford last summer is a fine structure, and is very satisfactory, as all the bridges have been that you have built for us. I recommend your work above any other that I know of.
Respectfully, C. E. GOODWIN, Mayor.

The Berlin Iron Bridge Co., East Berlin, Conn.: EBENEZER, N. Y.

Gentlemen—You have built under my superinspection in my town of West Seneca, Erie Co., N. Y., two (2) very fine large iron bridges to the best expectation of people and myself, as Commissioner of Highways. I can, with the best of my ability, recommend the work and company. Yours very truly,
JOHN A. WITZIG, Com. Highways.

The Berlin Iron Bridge Co., East Berlin, Conn.: CANISTEO, N. Y.

Gentlemen—We have two of your wrought-iron bridges erected in this town, of 110 and 100 ft. spans, built in 1887 and 1888. Can safely recommend your bridge to the public as being strong, durable, neat in appearance, and the bridge to buy. They give good satisfaction to the people of our town.
Yours truly, N. J. STEPHENS, Com. Highways.

To whom it may concern:

We, the undersigned, respectfully certify that The Berlin Iron Bridge Co., of East Berlin, Conn., erected a suspension bridge across the river Ausable in the village of Keesville, and repaired the iron bridge at Clintonville, by putting in a floor system, aligning it, etc., that their work was performed in an excellent manner, and gave universal satisfaction. We are pleased to have an opportunity to testify as to the satisfactory work on these bridges, the reasonableness of their charges, the courtesy of their foreman, and the honorable business dealing that has thus far characterized their relations with us.

W. HARPER, } Commissioners of Highways
HARRISON ARNOLD, } of the Town of Ausable,
R. A. MCCORMICK, } Clinton Co., N. Y.
L. B. DAVIS, } Commissioners of Highways
JOHN RUMNEY, } of the Town of Chesterfield,
R. B. HINDES, } Essex Co., N. Y.

The Berlin Iron Bridge Co., East Berlin, Conn.: NEWPORT, N. Y.

Gentlemen—The iron bridge which you built for us between the towns of Newport and Fairfield at Middleville is satisfactory in every way, shape, and manner. The bridge has strength and stiffness both vertically and laterally, and presents a very ornamental appearance. Your dealings with the town have been very satisfactory indeed, and all our citizens speak well of your bridge and of all your dealings with us. The bridge increases in favor every day, and we should be pleased to show it to parties who want to see a first-class bridge.

MARSHAL ROOT, } Commissioners of Highways of Newport, N. Y.
WILLIAM CROSSETT, }
CHARLES POUND, Late Commissioner of Highways of Fairfield, N. Y.

The Berlin Iron Bridge Co., East Berlin, Conn.:

MADISON, CONN.

Gentlemen—Our iron bridge built by you in 1882 is all correct, and gives universal satisfaction, wish we had more of them. We made no mistake when we contracted with you for a Parabolic truss bridge.

J. H. MEIGS, Selectman.

The Berlin Iron Bridge Co., East Berlin, Conn.:

STURBRIDGE, MASS.

Gentlemen—The iron bridge you built for our town last November is a neat and substantial structure, is admired and appreciated by every one, and gives entire satisfaction. Should our town need another bridge they would know where to look for first-class work.

Respectfully yours,

NOAH D. LADD, for the Board of Selectmen.

The Berlin Iron Bridge Co., East Berlin, Conn.:

EPSOM, N. H.

Gentlemen—The bridge built by you for our town is giving perfect satisfaction to every one. We believe it to be thoroughly and strongly built.

Respectfully,

CHRISTOPHER S. HEATH,
JOHN H. DOLBUR,
GEORGE H. BURNHAM, } Selectmen.

The Berlin Iron Bridge Co., East Berlin, Conn.: MAINE, BROOME CO., N. Y.

Gentlemen—The bridge put up for us this summer by The Berlin Iron Bridge Co. (85 ft. span), gives good satisfaction in every respect. It was all that it was recommended to be, and the town people think there is nothing like it, and I shall take pleasure in recommending your work and showing our bridge to any party in want of first-class work.

T. T. LAWTON, Com. Highways.

The Berlin Iron Bridge Co., East Berlin, Conn.:

BAINBRIDGE, N. Y.

Gentlemen—Yours received, and would say that the bridge is more than satisfactory, for we were to have but one hub rail, and we got two, which adds very much to the bridge. The bridge gives entire satisfaction to every one.

Yours truly, WM. C. BANNER, Com. Highways.

The Berlin Iron Bridge Co., East Berlin, Conn.:

PANAMA, N. Y.

Gentlemen—We are very much pleased with the bridge you have put up for us; we think it will give entire satisfaction to all concerned.

Yours truly,

O. S. KNIGHT.

The Berlin Iron Bridge Co., East Berlin, Conn.:

BYRON, N. Y.

Gentlemen—Your letter of inquiry about the bridges was received, and will say in answer, they are satisfactory in every respect, to me and to the public, so far as I know. I think they are a strong and durable bridge.

Yours truly,

L. A. DIBBLE.

The Berlin Iron Bridge Co., East Berlin, Conn.:

MANSFIELD DEPOT, CONN.

Gentlemen—The two iron bridges you built between the towns of Mansfield and Coventry the past summer over the Willimantic River have given good satisfaction, being solid and substantial structures in every respect.

Yours truly, A. K. BROWN, Chairman Selectmen.

The Berlin Iron Bridge Co., East Berlin, Conn.:

CONKLIN, N. Y.

Gentlemen—The bridge your Company has just completed at Conklin Forks, gives general satisfaction. I find everything is done according to plans and specifications, and in a workmanlike manner, feeling confident that it is as good a bridge as the one you built for our town four years ago which has been thoroughly tested.

Yours truly, C. W. TOMKINS, Com. Highways.

The Berlin Iron Bridge Co., East Berlin, Conn.:

FAIRFIELD, ME.

Dear Sir—Yours of the 30th inst. came to hand this evening, and answering, will say, the bridge built by you for us this season has thus far given entire satisfaction, so far as our people have expressed themselves. We have found your company prompt and reliable, and the work thorough, so far as we can judge.

Yours respectfully, F. E. MCFADDEN, Selectman.

The Berlin Iron Bridge Co., East Berlin, Conn.:

CAMPTON, N. H.

Gentlemen—The bridge built for us by The Berlin Iron Bridge Company last August, gives good satisfaction in every respect. It is all it was recommended to be.

Yours respectfully,

C. W. PULSIFER,
A. P. ROWE,
D. B. PULSIFER, } Selectmen.

The Berlin Iron Bridge Co., East Berlin, Conn.:

KEENE MILLS, ME.

Gentlemen—Yours of February 21st received. In regard to the bridge your company built in this town (Turner) three years ago, it is called the best one in town, far ahead of the one The King Iron Bridge Co. built some six years ago. Your company will hear from us when we have occasion for any more bridges to build.

H. W. COPELAND.

The Berlin Iron Bridge Co., East Berlin, Conn.:

NAUGATUCK, CONN.

Gentlemen—Yours of the 27th inst. received, and in reply would say, your company have built for our town within the past six years five iron highway bridges with spans varying from 27 to 185 feet. I am pleased to say that they give general satisfaction, and have no hesitation in recommending your company to towns desiring to build iron bridges.

Yours respectfully,

THOMAS CONRAN, Chairman Selectmen.

A PARTIAL LIST OF
IRON HIGHWAY BRIDGES,
BUILT BY THE BERLIN IRON BRIDGE COMPANY,
EAST BERLIN, CONNECTICUT.

LOCATION.	NO. OF SPANS.	LENGTH OF EACH SPAN IN FEET.	WIDTH OF ROADWAY IN FEET.	NUMBER AND WIDTH OF SIDEWALKS.	LOCATION.	NO. OF SPANS.	LENGTH OF EACH SPAN IN FEET.	WIDTH OF ROADWAY IN FEET.	NUMBER AND WIDTH OF SIDEWALKS.
Nashua, N. H.	4	1—170 1—160 1—150 1—142	20	1—6 feet wide.	Hume, N. Y.	2	129	16	
San Antonio, Texas	1	84	22	2—5 feet each.	Danforth, Me	1	54	20	
Buckfield, Me	2	67 and 78	14	2—9 feet each.	Jay, N. Y.	1	128	18	2—6 feet each.
Homer, N. Y.	4	1—54 1—71 1—46 1—59 2—100 1—116	12 12 14 14 12 12		Wyoming Co., Pa.	7	1—115 2—77 2—84 1—85 1—45 2—140 1—55 2—64	12 16 18 18 14	2—5 feet each. 2—5 feet each.
Great Barrington, Mass	9	1—53 1—79 1—32 1—90 1—115 1—59 1—58 1—46 1—49 1—45 109	14 18 12 20 18 12 10 10 17 30 20	1—5 feet wide. 1—5 feet wide.	Manchester, N. H.	8	1—52 1—57½ 1—75 70 50 153 28 103 110 40 116	12 37 15 15 32 25 26 18 14 20	Made with upper roadway 50 feet wide, and lower roadway 18 feet wide; also 560 feet of iron trestle, all 50 feet wide. 2—5 feet each.
Meriden, Conn	4	1—46 1—49 1—45	10 10 30	2—10 feet each.	Acworth, N. H.	1	70	15	
Richford, Vt	1	109	20	2—5 feet each.	Gilsum, N. H.	1	50	15	
Berlin Conn,	8	1—70 1—42 1—72 1—79 1—40 1—40 1—55 1—29	12 14 12 14 20 14 18 13½	Girder Bridge.	Lowell, Mass.	5	153	32	2—7 feet each.
					Montville, Conn	1	28	25	Girder Bridge.
					Blair Co., Pa.	1	103	26	2—8 feet each.
					Kent, Conn	2	110	18	
					North Canaan, Conn.	1	40	14	
					Hollis, Me.	1	116	20	
					Windsor, N. Y.	9	6—97 to 110 1—31 2—170	18 18 16	
					Claremont, N. H.	1	115	20	2—5 feet each.
					Between Tilton and Northfield, N. H.	2	1—100 1—50	20 20	2—4 feet each. 2—4 feet each.
					Wellsville, N. Y.	1	85	16	
					Chenango, N. Y.	2	1—35 1—60	12 12	

LIST OF IRON HIGHWAY BRIDGES—Continued.

LOCATION.	NO. OF SPANS.	LENGTH OF EACH SPAN IN FEET.	WIDTH OF ROADWAY IN FEET.	NUMBER AND WIDTH OF SIDEWALKS.	LOCATION.	NO. OF SPANS.	LENGTH OF EACH SPAN IN FEET.	WIDTH OF ROADWAY IN FEET.	NUMBER AND WIDTH OF SIDEWALKS.
St. Johnsbury, Vt	1	57	18	1—4 feet wide.	Egremont, Mass	1	34	16	2—5 feet each.
Between Sandisfield and Tol- land, Mass	1	93	12		Allen Co., Ohio	1	99	18	
Glendale, Mass	1	87	12		Chesterfield, Mass.	2	78	14	
Between Shelburne Falls and Conway, Mass	1	198	16		Southbury, Conn	1	75	12	
Wallingford, Conn	2	{ 1—25 1—31	{ 20 16	Plate Girder.	Between Burnham and Pitts- field, Me.	1	150	16	
West Waterville, Me.	2	61	20	1—5 feet wide.	Raymondsville, N. Y	2	{ 1—65½ 1—290	{ 12 18	
Amherst, Mass	2	{ 1—43 1—60	{ 15½ 18		Thomaston, Conn.	1	100	12	
Saco, Me	3	{ 1—70 1—65 1—56	24	1—7 feet wide.	Londonderry, Vt	1	73	14	
Bet. Madison and Clinton, Ct	1	64	17		Victor, N. Y	1	100	14	
Stockbridge, Mass.	1	117	16	1—6 feet wide.	Whitefield, N. H	1	66	20	
Bartlett, N. H	1	76	16		Bath, N. Y	1	144	16	
Cummington, Mass	1	74	12		Seymour, Conn	4	{ 1—128 1—60 1—42 1—50 1—64 1—40 1—56 1—64 1—25 1—100 1—54	{ 18 18 16 14 16 16 18 18 16 16 16	2—5 feet each.
Bet. Laconia and Guilford, N.H.	1	102	16	1—4 feet wide.	Hornellsville, N. Y	7	{ 1—64 1—25 1—100 1—54	{ 18 16 16 16	1—5 feet wide.
Butternuts, N. Y	2	75	16		Williamstown, Mass.	1	104	16	
		{ 1—101 1—32 1—41 1—67	{ 22 60 30 50	2—6 feet each. 2—20 feet each. 2—6 feet each. 2—24 feet each.	Lowville, N. Y	2	{ 1—114 1—68 1—46 1—76	{ 16 30 18 12	2—6 feet each.
New Haven, Conn	9	{ 1—60 1— 1—85 1—103½ 1—40	{ 30 22 22 22	Girder Bridge. 2—10 feet each. Girder Bridge. 2—5 feet each. 2—5 feet each. Girder Bridge.	Dudley, Mass.	2	{ 41 64 89	{ 14 18 18	1—5 feet wide.
Ashland, N. H.	1	30	30		Poultney, Vt	1	41	14	
Hartland, Me	2	{ 1—55 1—52	18		Burns, N. Y	1	64	18	1—5 feet wide.
Decatur Co., Ind	1	104	16		Plainville, Conn	1	89	18	1—5 feet wide.
Conway, N. H.	2	{ 1—38 1—89	{ 20 16	1—5 feet wide. 1—5 feet wide.	Salamanca, N. Y	5	{ 1—85 3—133 1—154	{ 16 20 20	2—5 feet each.
Between Litchfield and Har- winton, Ct	1	86	14	1—5 feet wide.	Galesville, Conn	1	31	16	
					Gardner, Mass.	3	{ 2—14 1—30	{ 16 16	2—5 feet each.
					Sheldon, Vt	1	84	14	

LIST OF IRON HIGHWAY BRIDGES—Continued.

LOCATION.	NO. OF SPANS.	LENGTH OF EACH SPAN IN FEET.	WIDTH OF ROADWAY IN FEET.	NUMBER AND WIDTH OF SIDEWALKS.	LOCATION.	NO. OF SPANS.	LENGTH OF EACH SPAN IN FEET.	WIDTH OF ROADWAY IN FEET.	NUMBER AND WIDTH OF SIDEWALKS.
Derby, Conn.	4	{ 1—33 3—61½	18 28½	2—7 feet each.	Malone, N. Y.	2	{ 1—52 1—84	16 16	2—5 feet each.
Dryden, N. Y.	2	{ 1—117 1—48	16		Beacon Falls, Conn.	2	{ 1—112 1—39	14 14	
Blue Hill, Me.	1	117	14		Stockholm Depot, N. Y.	5	{ 2—85 1—50 2—100	16 12 16	
Pike, N. Y.	1	48	24		Lycoming Co., Pa.	9	{ 1—100 1—280 1—89 1—98 5—200	16 16 18 18 21	
French Creek, N. Y.	1	70	12		Manchester, Vt.	1	30	21	1—5 feet wide.
Warren Co., Ohio.	4	{ 1—215 1—63 1—29 1—80	16	2—5 feet each.	Between Rockland and Thom- aston, Me.	1	60	18	
Elkhart Co., Ind.	1	85	18		Farmersville, N. Y.	2	{ 1—31 1—40	14	
Richford, N. Y.	1	50	12		Washington Mills, N. Y.	3	{ 1—18½ 1—15 1—16	19 16 20	Beam Bridges.
Newark Valley, N. Y.	3	{ 2—35 1—70	12 14	2—5 feet each.	Willsboro, N. Y.	2	{ 1—134 1—61	18½ 11	2—5 feet each.
Carbon Co., Pa.	1	57	16	2—5 feet each.	Nichols, N. Y.	1	84	18	
Southington, Conn.	3	{ 1—35 1—36 1—28	24 24 30	2—5 feet each.	Delhi, N. Y.	2	{ 1—50 1—116	16 14	1—5 feet wide.
Warrensburgh, N. Y.	1	93	13		Wilson, N. Y.	3	{ 1—57 1—52 1—172	18 16 16	
Bombay, N. Y.	2	{ 1—64 1—52	12 14		Between Westerly, R. I. and Stonington, Conn.	4	40	30	{ 2—10 feet walks. Concrete road-bed.
Ft. Covington, N. Y.	2	{ 1—70 1—40	12		Leroy, N. Y.	2	{ 1—112 1—21	16 14	
Lyndon, Vt.	2	{ 1—32 1—56	15		Hadley, N. Y.	2	{ 1—136 1—45	16	
Bet. Middletown and Crom- well, Conn.	2	38	13		Cattaraugus, N. Y.	1	90	14	
Dover, Me.	1	154	18		Bet. Clay and Schroepfels, N. Y.	2	87	16	
Champlain, N. Y.	1	105	14	1—4 feet wide.	Weston, Conn.	1	54	12	
Oxford, N. Y.	1	154	20	2—6 feet each.	Prattsville, N. Y.	1	45	22	
Conklin, N. Y.	1	44	16		Manlius, N. Y.	1	58	16	1—6 feet wide.
Camden, Me.	1	159	24	1—6 feet wide.					
Lisbon, N. H.	3	{ 2—65 1—90	18	2—5 feet each.					
Lee, N. H.	2	{ 1—54 1—38	16 24						
Bangor, Me.	1	46½	70	Concrete road-bed.					
Berkshire, Vt.	1	90	13						

LIST OF IRON HIGHWAY BRIDGES—Continued.

LOCATION.	NO. OF SPANS.	LENGTH OF EACH SPAN IN FEET.	WIDTH OF ROADWAY IN FEET.	NUMBER AND WIDTH OF SIDEWALKS.	LOCATION.	NO. OF SPANS.	LENGTH OF EACH SPAN IN FEET.	WIDTH OF ROADWAY IN FEET.	NUMBER AND WIDTH OF SIDEWALKS.
Clinton, Me	1	145	18		Middlefield, Conn.	1	42	12	
Montoursville, Pa.	1	34	18				1—42	12	
Buxton, Me	1	119	20				1—50	34	2—6 feet each.
Sharon, Conn	1	40	18				2—152	24	2—5 feet each.
Norfolk, Conn	1	25	24	Concrete Roadway.			1—54	24	2—5 feet each.
Plymouth, Conn	2	{ 1—28 }	20				1—205	24	2—5 feet each.
		{ 1—42 }					1—46	24	2—5 feet each.
Campton, N. H.	3	{ 1—72 }	14		Waterbury, Conn	15	1—69	24	2—5 feet each.
		{ 1—101 }	16				1—13	350	Concrete.
		{ 1—140 }					1—43	16	
Franconia, N. H.	2	{ 1—70 }	16	1—5 feet wide.			1—175	27	2—9 feet each.
		{ 1—94 }	16				1—65	30	2—8 feet each.
Glen, N. Y.	2	{ 1—71 }	13				1—31	38	2—6 feet each.
		{ 1—64 }							Beam Bridge.
Rocky Hill, Conn	1	30	16				1—20	30	" "
		{ 1—19 }	50	Concrete Road-bed.			1—62	32	2—7 feet each.
		1—23	28	" "	Orwell, Vt.	1	64	16	
		1—38	18		Swanton, Vt.	3	40	28	
Bristol, Conn	7	{ 1—54 }	18				{ 1—78 }	18	2—5 feet each.
		1—31	18	{ 2—6 feet walks.	Ludlow, Vt.	3	{ 1—38½ }	15	
		1—20	36½	{ Concrete road-bed.			{ 1—40 }	18	2—5 feet each.
		1—19	23	{ 1—6 feet walk.	Barton, Vt.	1	44	20	1—5 feet wide.
				{ Concrete road-bed.	Friendship, N. Y.	2	{ 1—37 }	16	
Bet. Buxton and Hollis, Me .	3	{ 2—120 }	16				{ 1—78 }	16	1—5 feet wide.
		{ 1—76 }	18		Lee, Mass.	2	{ 1—30 }	21	
		1—32	12				{ 1—81 }	14	2—5 feet each.
Sheffield, Mass	4	{ 1—38 }	12		Westport, Mass.	1	44	20	1—4 feet wide.
		1—81	12				{ 1—70 }	14	
		1—51	16				1—40	12	
Shelby Co., Ind	2	{ 1—94 }	16		Canandaigua, N. Y.	5	{ 1—80 }	16	
		{ 1—120 }					1—56	12	
		1—84	16	2—5 feet each.			1—46	16	
		1—90	16	1—5 feet wide.			{ 1—48 }	14	
		1—84	18	2—5 feet each.			1—22	30	2—5 feet each, (concrete.)
North Adams, Mass.	8	{ 1—84 }	20	2—5 feet each.	Castleton, Vt.	4	{ 1—40 }	13	
		1—69	20	2—6 feet each.			{ 1—44 }	13	
		1—47	20	2—6 feet each.			1—44	24	2—6 feet each.
		1—59	12		Taunton, Mass	3	{ 1—48 }	33	2—9 ft. (concrete.)
		1—96	18	1—5 feet wide.			1—43	36	2—12 ft. " "

LIST OF IRON HIGHWAY BRIDGES—Continued.

LOCATION.	NO. OF SPANS.	LENGTH OF EACH SPAN IN FEET.	WIDTH OF ROADWAY IN FEET.	NUMBER AND WIDTH OF SIDEWALKS.	LOCATION.	NO. OF SPANS.	LENGTH OF EACH SPAN IN FEET.	WIDTH OF ROADWAY IN FEET.	NUMBER AND WIDTH OF SIDEWALKS.
Charleston, N. Y	1	39	12		Nat'l Armory, Spring'd, Mass	1	147	16	
		1—78	12		Munroe, Me	1	50	20	
Washington, Conn	6	1—63	12				1—50	16	
		1—75	16		Plattsburgh, N. Y	5	1—124	16	1—5 feet wide.
		1—64	12				2—89	27	
Westhaven, Vt	1	1—63	12				1—50	12	
		1—74	16		Westfield, Mass		1—60	18	
		63	12				1—75	16	
		1—29	20		Orwell, N. Y		1—124	12	
Naugatuck, Conn.	5	1—185	20	2—7 feet each.			1—150	14	
		1—27	18				1—43	14	
		1—44	18		Philadelphia, N. Y	4	1—48	12	
		1—29	20	1—5 feet wide.			1—54	12	
Woodbury, Conn	3	1—64	12				1—44	12	
		1—64	12		Middletown, Conn	3	2—35	24	1—5 feet wide.
Hopkinton, N. Y	1	1—74	12				1—47	12	
Bet. Salisbury and Canaan, Ct.	1	90	16	1—5 feet wide.			1—54	12	
		157	18				1—43	16	
		1—45½	13		Dalton, Mass	4	1—54	16	
Litchfield, Conn	4	1—18½	18				1—57	16	
		1—23	18				1—23	16	
		1—44	18		Collinsville, Conn	2	1—43	20	1—5 feet wide.
Whateley, Mass	2	1—60	10				1—84	14	
		1—59	16				1—64	12	1—5 feet (concrete)
		1—76	14				1—60	12	
Hamburgh, N. Y	4	1—30	14	Cylinder piers.	Torrington, Conn.	9	2—44	12	
		1—27	14				1—79	16	
		1—28	14				1—89	18	
		1—28	16	2—8 feet each.			1—49	12	
		1—46	16				2—44	12	
		1—40	14		So. Norwalk, Conn	1	159	18	2—5 ft. each (draw bridge.)
		1—51	14						
		1—46	12		Norwalk, Conn.	1	85	18	
Avoca, N. Y	13	1—106	12		Erwin, N. Y	2	161	16	Pratt Truss.
		2—40	12		Black Brook, N. Y	1	59	12	
		1—76	18		Fall River, Mass	1	58	20	
		1—72	14		Between No. Haven and Ham-				
		1—40	14		den, Conn	1	54	12	
		2—40	14		Keene, N. Y	1	124	13	

LIST OF IRON HIGHWAY BRIDGES — Continued.

LOCATION.	No. OF SPANS.	LENGTH OF EACH SPAN IN FEET.	WIDTH OF ROADWAY IN FEET.	NUMBER AND WIDTH OF SIDEWALKS.	LOCATION.	No. OF SPANS.	LENGTH OF EACH SPAN IN FEET.	WIDTH OF ROADWAY IN FEET.	NUMBER AND WIDTH OF SIDEWALKS.
Elizabeth Town, N. Y.	1	43	12	2—5 feet each.	Duanesburg, N. Y.	1	32	21	
		{ 1—114	15	1—5 feet wide.	Derby, Vt.	1	65	14	
Jewett City, Conn.	4	{ 1—73	16	1—5 feet wide.	Uxbridge, Mass.	1	84	22	
		{ 1—65	10		Hammond, N. Y.	1	60	14	
		{ 1—100	8		Meriden, Conn.	2	{ 1—45	30	2—10 feet each.
Plainfield, Conn.	3	{ 2—106 }	14				{ 1—48½	17	
		{ 1—124 }			Mendon, N. Y.	1	69	14	
Thompson, Conn.	2	{ 1—100	18		Hornellsville, N. Y.	2	{ 1—100	16	
Putnam, Conn.	1	{ 1—76	22	2—5 feet each.			{ 1—54	16	2—5 feet each.
Jay, Vt.	1	110	20				{ 1—25	31	2—8 ft. (concrete)
Natick, R. I.	3	{ 1—40	15				{ 1—26	33	2—8 “ “
Bennington, N. H.	1	{ 1—102	18	1—4 feet wide.	Brockton, Mass.	5	{ 1—32	27	2—7 “ “
		{ 2—75	12				{ 1—27	31	2—7 “ “
Smithfield, R. I.	2	{ 1—85	16				{ 1—23	47	2—7 “ “
		{ 1—49	22		Corinth, Vt.	1	84	12	
Chester, Vt.	1	{ 1—44	20	1—6 feet wide.	Binghamton, N. Y.	4	{ 3—161	24	2—6 feet each.
Chelsea, Vt.	1	79	13				{ 1—29	32	2—9 “ “
		55	18	1—4 feet wide.	Seneca Falls, N. Y.	1	100	24	2—10 “ “
		{ 2—24	24		Matteawan, N. Y.	1	64	10	
Braintree, Mass.	6	{ 1—32	19	1—5 feet wide.	Chateaugay, N. Y.	2	{ 1—34	16	
		{ 1—30	19	1—5 feet wide.			{ 1—46	12	
		{ 1—28	29	1—6 feet wide.	W. Stockbridge, Mass.	1	46	12	1—5 feet wide.
		{ 1—28	24				{ 1—80	10	
Lawrence, Mass.	1	85	21		Winsted, Conn.	3	{ 1—75	18	
Canterbury, Conn.	1	150	14				{ 1—65	18	1—5 feet wide.
Bet. Biddeford and Saco, Me.	10	{ 6—55	22	1—8 feet wide.	Norwich, Conn.	1	54	16	
Falmouth, Me.	1	{ 4—55	22	1—7½ feet wide.	Bet. Hamb'h and Seneca, N.Y.	1	35	16	
		135	20		Putney, Vt.	1	64	12	
Maine, N. Y.	3	{ 1—54	16		Wayne Co., Ind.	1	69	14	
		{ 1—34	16		Hartford, Conn.	1	124	24	2—6 ft. each, (draw bridge.)
		{ 1—84	16						
Cape Vincent, N. Y.	1	40	14		Weston, Vt.	1	43	16	
Mount Morris, N. Y.	1	124	14	Pratt Truss.	Newport, N. H.	1	56	28	2—7 feet each.
LeRoy, N. Y.	1	54	15		Danielsonville, Conn.	1	139	20	2—5 “ “
		{ 1—68	12		Union, N. Y.	1	20	18	
Highgate, Vt.	3	{ 1—217	20		Norwich Bleaching, Dyeing & Printing Co., Norwich, Ct.	2	66	12	
		{ 1—72	20		W. A. Slater, Jewett City, Ct.	1	33	12	
Hartwick Seminary, N. Y.	2	{ 1—42	12		Whitingham, Vt.	1	139	16	
		{ 1—17	20						

LIST OF IRON HIGHWAY BRIDGES—Continued.

LOCATION.	NO. OF SPANS.	LENGTH OF EACH SPAN IN FEET.	WIDTH OF ROADWAY IN FEET.	NUMBER AND WIDTH OF SIDEWALKS.	LOCATION.	NO. OF SPANS.	LENGTH OF EACH SPAN IN FEET.	WIDTH OF ROADWAY IN FEET.	NUMBER AND WIDTH OF SIDEWALKS.
Fairfield, Me.	2	95	18	1—5 feet wide.	Bet. Milton and Colchester, Vt	1	214	16	
Hinsdale, Mass.	2	{ 1—27 1—40	12 18		Canisteo, N. Y.	2	{ 1—114 1—104	16 18	1—5 feet wide.
Stamford, Conn.	3	{ 1—150 2—62	20 35	2—5 feet each. 2—6 “ “	Bet. New Britain and Berlin, Ct	1	34	20	Concrete.
Bainbridge, N. Y.	1	44	16		Bet. New Milford and Bridge- water, Conn.	2	120	12	
Windham, Me.	3	{ 1—57 1—108 1—40	18 16 15		Evans, N. Y.	2	{ 1—26 1—40	14 14	Cylinder Piers.
Montgomery, N. Y.	2	113	20	1—6 feet wide.	Harmony, N. Y.		49	12	“ “
Weld, Me.	1	48	18		Bet. Cheektowaga and West Seneca, N. Y.	1	96	18	
Epsom, N. H.	1	79	14		Alford, Mass.	1	72	12	
Waterbury Brass Co. W'bury, Ct	2	26	15	Concrete.	Andover, Vt.	1	48	13	
Massena, N. Y.	3	{ 1—74 1—234 1—180	14 16 18	1—5 feet wide.	Conklin, N. Y.	1	48	14	
Byron, N. Y.	3	{ 1—30 1—28 1—21	16 16 16		Ansonia, Conn.	2	{ 1—80 1—60	8 8	1—8 feet wide.
Higganum, Ct.	1	49	20		New Market, N. H.	1	60	25	
Philadelphia, Pa.	2	{ 1—94 1—75	22 20	2—6 feet each.	Bet. Jamestown and Ellicott, N. Y.	1	76	16	
Fairmount Park, Phila., Pa. .	1	76	10		Bozrah, Conn.	1	80	18	
Poland, N. Y.	1	114	16		Brant, N. Y.	1	30	14	
Between Half Moon and Still- water, N. Y.	1	49	20		Vernon, Conn.	2	54	18	1—5 feet wide.
Rutland, Vt.	1	16	28		Chichester, N. H.	1	96	16	
Rockville, Conn.	2	{ 1—23 1—62	34½ 18	2—6 feet each. 1—5 feet wide.	Panama, N. Y.	1	46	12	1—5 feet wide.
Ellery, N. Y.	1	30	14		Nichols, N. Y.	1	40	16	
Bet. Owego and Candor, N. Y.	1	84	12		No. Anson, Me.	2	{ 1—148 1—60	18 18	1—3 feet wide. 1—3 “ “
Greenwich, Conn.	2	{ 1—53 1—46	20 16	2—4 feet each.	Western Plank Road Co., Black Brook, N. Y.	1	99	12	1—4 feet wide.
Turner, Me.	2	{ 1—54 1—88	16 14		The Collins Co., Collinsville, Ct	1	42	14	
Cheshire, Ct.	1	32	12		Wilkesbarre, Pa.	1	44	32	2—8 feet “
Between Mansfield and Cov- entry, Conn.	6	{ 1—34 1—37 3—46	12		Ashland, N. Y.	1	82	16	
					Bet. Coventry and Columbia, Ct	1	84	12	
					Bet. Chesterfield and Ausable, N. Y.	1	240	8	Suspension.
					Suffield, Conn.	3	{ 1—79 1—34 1—128	14 14 16	Deck.
					New Milford, Conn.	1	189	16	

LIST OF IRON HIGHWAY BRIDGES—Continued.

LOCATION.	No. OF SPANS.	LENGTH OF EACH SPAN IN FEET.	WIDTH OF ROADWAY IN FEET.	NUMBER AND WIDTH OF SIDEWALKS.	LOCATION.	No. OF SPANS.	LENGTH OF EACH SPAN IN FEET.	WIDTH OF ROADWAY IN FEET.	NUMBER AND WIDTH OF SIDEWALKS.
Tonawanda, N. Y	1	76	20	2—5 feet each, (cylinder piers)	Bet. Vienna and Verona, N.Y	3	79½	16	{ 2—5 feet each, cylinder piers.
Fairfield Paper Co., Fair'd, Mass	2	150	16		Bergen Co., N. J	1	84	16	
Quincy, Mass	2	{ 1—18 1—32	22	{ Beam Bridges.	Cheektowaga, N. Y	1	76	16	
Wood Island Park, Boston, Mass	1	34½	40	2—10 ft. each, (girder bridge.)	Bradford Co., Pa	2	{ 1—79 1—69	8	
Turner & Smith, Waterbury, Ct	2	72	9½	1—5 feet wide.	Bet. Newport and Fairf'd, N.Y	1	200	20	2—5 feet each.
Cuttingsville, Vt	1	90	18		Franklin, N. H.	1	58	18	2—5 “ “
Sherman, N. Y	1	59	12		Bet. Verona and Lenox, N. Y	1	66	20	1—5 feet wide.
Bet. Middlefield and Becket, Mass	1	84	12		East Hamburg, N. Y	2	{ 1—25½ 1—30	14	Cylinder Piers.
New Hartford, Conn	1	94	12		Buffalo, N. Y	2	{ 1—84 1—112	12	
Canton, Conn	2	105½	19	2—5 feet each.	Hurley, N. Y	1	148	13	2—6 feet each.
Enfield, Conn	1	69	12		Cazenovia, N. Y	1	26	18	Beam Bridge.
Schaghticoke, N. Y	1	62	12		Bet. Windsor & Colesville, N.Y	2	171	16	
Bet. Schaghticoke and Lansingburgh, N. Y	1	28	13	Beam Bridge.	Harmony, N. Y	1	36½	12	
Franklin, N. Y	1	51½	12		Newport, N. H	1	78½	16	
East Windsor, Conn	1	64	12		Enfield, Conn	1	36	21	Concrete.
Pittsfield, Mass	1	58	19		Birmingham, Conn	5	{ 1—119 2—35½ 2—31½	28	2—5¼ feet each.
Deposit, N. Y	1	52	14		Waverly, N. Y	1	57	16	2—5¼ “ “
Warren, Mass	1	73	18		West Seneca, N. Y	1	110	16	2—5¼ “ “
Bet. Windham and Standish, Me	1	64	16		Langdon, N. H	1	42	12	2—5 “ “
Vestal, N. Y	1	90	16	Pratt Truss.	Oneonta, N. Y	2	{ 1—169 1—72	18	2—5½ feet each.
Clinton, Mass	2	{ 1—94½ 1—89	24	2—6 feet each.	Sturbridge, Mass	1	64	12	
Salem, N. Y	2	{ 1—51 1—44	12		Salisbury, Mass	1	158	20	1—6 foot walk.
Pittsfield, Me	3	89	16		Woonsocket, R. I	1	72	12	
New Britain, Conn	1	18	34	1—6 ft. (concrete)	West Chesterfield, N. H	1	328	16	Suspension.
Middletown, N. Y	1	28	18	2—5 feet each.	Orange, Conn	1	20	20	
Franklin, N. Y	1	15	12	Beam Bridge.	Burlington Co., N. J	1	54	17	
Sheldon, Vt	1	250	16	Suspension.	Thomaston, Me	1	64	16	
Bradley & Hubbard, Meriden, Conn	1	32½	12		Barre, Vt	1	72	14	
Bet. Hamb'gh and Evans, N.Y	1	50	16		Fairfield, Conn	2	36½	30	Concrete.
Bet. Milford and Orange, Ct	1	28	20		Lancaster, N. Y	3	{ 1—95 1—90 1—105	14	
Sussex Co., N. Y	1	74	12						

THE SILSBY STEAM FIRE ENGINE

RELIABLE, DURABLE, EFFICIENT.

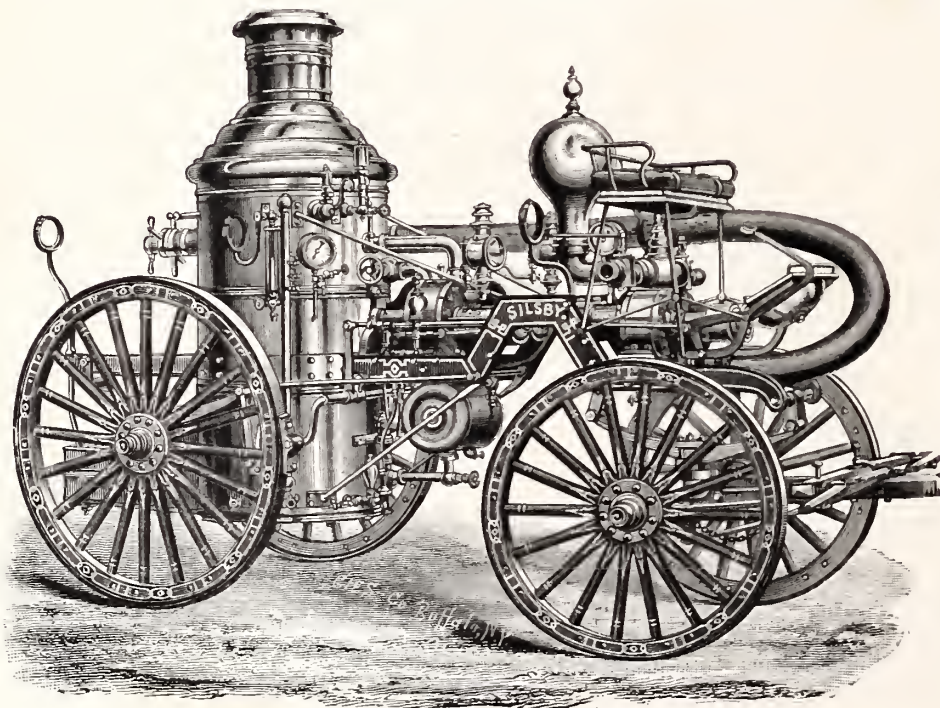
*THERE ARE NEARLY NINE HUNDRED
OF THESE ENGINES NOW IN
ACTIVE SERVICE.*

HOSE CARRIAGES, CARTS, AND WAGONS.
ROTARY PUMPS,
STEAM HEATING APPARATUS,
FIRE DEPARTMENT SUPPLIES.

Send for Illustrated Catalogue.



THE SILSBY . .
MANUFACTURING CO.,



237 MAIN STREET, = = = SENECA FALLS, N. Y.



COLLAR BOLT.

Steward and Romaine Manufacturing Co.

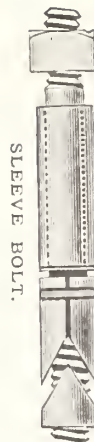
LIMITED

OWNERS OF PATENT, AND SOLE MANUFACTURERS OF

EXPANSION



BOLTS



SLEEVE BOLT.

No. 130 North Sixth Street,

PHILADELPHIA, PENNSYLVANIA,

— WOULD RESPECTFULLY CALL THE ATTENTION OF —

Architects, Engineers, Hardware Dealers, Carpenters, and Builders,

AND WORKERS IN IRON WORK OF ALL KINDS,

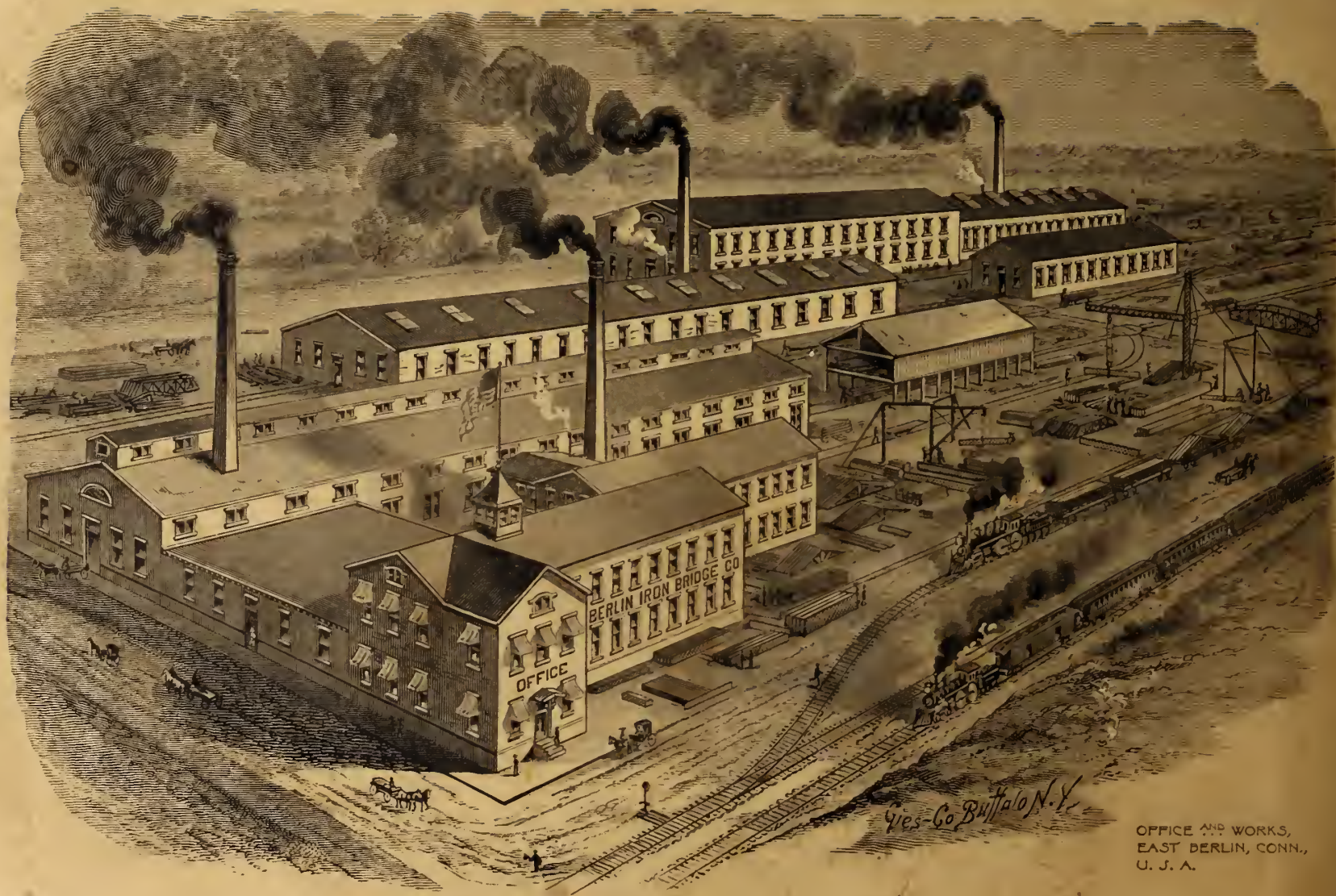
TO * THE * APPLICATION * OF * THIS * BOLT.

Sample Bolts and Information Furnished.

1889 Catalogue Now Ready.







OFFICE AND WORKS,
EAST BERLIN, CONN.,
U. S. A.